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SITE ASSESSMENT REPORT FOR BUILDING 2273 MAIN BASE WITH TRANSMITTAL NTC ORLANDO FL

3/1/2001

TETRA TECH

SITE ASSESSMENT REPORT FOR BUILDING 2273, MAIN BASE

Naval Training Center
Orlando, Florida

Southern Division
Naval Facilities Engineering Command
Contract Number N62467-94-D-0888
Contract Task Order 0024

MARCH 2001

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0301-A032

March 30, 2001

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Reference: CLEAN Contract No. N62467-94-D-0888
Contract Task Order No. 0024

Subject: Site Assessment Report for Building 2273
Naval Training Center, Orlando, Florida

Dear Ms. Nwokike:

Enclosed are two copies of the final Site Assessment Report for Building 2273. This final report includes revisions resulting from comments provided by the Orlando Partnering Team. If you have any questions regarding the report or the investigation, please contact me at (865) 220-4730.

Sincerely,

Steven B. McCoy, P.E.
Task Order Manager

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Enclosures

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Mr. Michael J. Campbell, Tetra Tech NUS
Mr. David Grabka, FDEP (2 copies)
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Ms. Nancy Rodriquez, USEPA Region 4
Mr. Steve Tsangaris, CH2M Hill
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Revised 4-20-01

Rev. 1
03/30/01

SITE ASSESSMENT REPORT FOR BUILDING 2273, MAIN BASE

Naval Training Center
Orlando, Florida

Southern Division
Naval Facilities Engineering Command
Contract Number N62467-94-D-0888
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MARCH 2001

SITE ASSESSMENT REPORT
FOR
BUILDING 2273, MAIN BASE

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

COMPREHENSIVE LONG-TERM
ENVIRONMENTAL ACTION NAVY (CLEAN) CONTRACT

Submitted to:

Department of the Navy, Southern Division
Naval Facilities Engineering Command
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Submitted by:

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CONTRACT TASK ORDER 0024

MARCH 2001

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PROFESSIONAL GEOLOGIST CERTIFICATION

I hereby certify that this *Site Assessment Report for Building 2273, Main Base, Naval Training Center, Orlando, Florida*, was prepared under my direct supervision in accordance with acceptable standards of geological practice.

Michael J. Campbell 3/30/01
Michael J. Campbell, P.G. / Date
License No. PG-0001981

TABLE OF CONTENTS

ACRONYMS v

EXECUTIVE SUMMARY ES-1

1.0 INTRODUCTION 1-1
1.1 PURPOSE AND SCOPE 1-1
1.2 DESCRIPTION AND SETTING 1-2
1.2.1 Location 1-2
1.2.2 Site Description 1-2
1.2.3 Topography and Drainage 1-2
1.2.4 Geology and Hydrology 1-8
1.2.5 Land Use 1-9
1.2.6 Potable Water Well Survey 1-9
1.2.7 Surface Water 1-10
1.3 BACKGROUND 1-10
1.3.1 Site History and Operations 1-10
1.3.2 Underground Storage Tank Removal and Closure Assessment 1-11

2.0 SUBSURFACE INVESTIGATION METHODS 2-1
2.1 CONTAMINATION ASSESSMENT, JULY 1996 TO MARCH 1997 2-1
2.2 ADDITIONAL CONTAMINATION ASSESSMENT, JUNE 1997 TO SEPTEMBER 1997 2-3
2.3 UTILITY CONSTRUCTION DAMAGE TO MONITORING WELLS 2-4
2.4 ADDITIONAL CONTAMINATION ASSESSMENT, SEPTEMBER 1999 TO SEPTEMBER 2000 2-4
2.4.1 Objectives and Guidance 2-4
2.4.2 Well Abandonment 2-6
2.4.3 New Well Installation 2-6
2.4.4 Soil Sampling 2-7
2.4.5 Groundwater Sampling 2-7
2.4.6 Surveying 2-8

3.0 RESULTS OF INVESTIGATIONS 3-1
3.1 SITE-SPECIFIC HYDROGEOLOGY 3-1
3.1.1 Lithology 3-1
3.1.2 Aquifer Characteristics 3-1
3.2 SOIL QUALITY 3-10
3.3 GROUNDWATER QUALITY 3-11
3.3.1 Investigations Prior to 1998 3-11
3.3.2 Investigations After 1998 3-12
3.3.3 Groundwater Quality Summary 3-12

4.0 DISCUSSION 4-1

5.0 CONCLUSIONS AND RECOMMENDATIONS 5-1

REFERENCES R-1

APPENDICES

A SITE ASSESSMENT REPORT SUMMARY SHEET A-1
B SOIL BORING LOGS B-1
C WELL COMPLETION LOGS C-1
D TETRA TECH NUS FIELD PERSONNEL D-1
E GRAIN SIZE ANALYSES E-1
F GROUNDWATER SAMPLING LOGS F-1
G CHAIN-OF-CUSTODY FORMS G-1
H GROUNDWATER ANALYTICAL RESULTS H-1
I WELL LOCATIONS AND TOP OF CASING ELEVATIONS I-1

TABLES

NUMBER PAGE

2-1 Well Construction Details 2-5
3-1 Grain Size Analyses 3-2
3-2 Groundwater Elevations Summary 3-3
3-3 Groundwater Analytical Results 3-17

FIGURES

NUMBER PAGE

1-1 USGS Topographic Map 1-3
1-2 Site Vicinity Map 1-4
1-3 Local Area Map 1-5
1-4 Site Plan 1-6
3-1 Groundwater Potentiometric Surface Map – Shallow Aquifer Zone 3-6
3-2 Groundwater Potentiometric Surface Map – Deep Aquifer Zone 3-8
3-3 Groundwater Exceedances in Shallow Wells 3-13
3-4 Groundwater Exceedances in Deep Wells 3-15

ACRONYMS

ABB-ES	ABB Environmental Services, Inc.
B&R Environmental	Brown & Root Environmental
bgs	below ground surface
CLEAN	Comprehensive Long-Term Environmental Action Navy
F.A.C.	Florida Administrative Code
FDEP	Florida Department of Environmental Protection
FPS	Florida Petroleum Services, Inc.
GCTL	Groundwater Cleanup Target Level
HLA	Harding Lawson Associates
KAG	Kerosene Analytical Group
MTBE	methyl *tert*-butyl ether
Navy	U.S. Navy
NTC	Naval Training Center
OPT	Orlando Partnering Team
OVA	organic vapor analyzer
PAH	polynuclear aromatic hydrocarbon
POP	Project Operations Plan
PVC	polyvinyl chloride
Quanterra	Quanterra Environmental Services
SOUTHDIV	Southern Division Naval Facilities Engineering Command
TCL	Target Compound List
TRPH	total recoverable petroleum hydrocarbon
TtNUS	Tetra Tech NUS, Inc.
USEPA	U. S. Environmental Protection Agency
USGS	U. S. Geological Survey
UST	underground storage tank
VOC	volatile organic compound

EXECUTIVE SUMMARY

Building 2273 is a wooden structure that once served as a pumping station for heating fuel used at numerous sites at the Naval Training Center, Orlando. Pumps in Building 2273 transferred fuel from four 11,500-gallon underground storage tanks to tank trucks. Old or contaminated fuel was returned to an on-site browser to await disposal. Two of the underground storage tanks were removed in 1993 and the remaining underground storage tanks were removed in January 1996. Approximately 2 cubic yards of contaminated soil found near product and vent lines led to environmental investigations in accordance with Chapter 62-770 of the Florida Administrative Code. The investigations proceeded as described below.

Contamination Assessment, July 1996 to September 1997

ABB Environmental Services, Inc., performed the following actions:

- Collected and analyzed 90 soil samples to determine the extent of soil contamination. Organic vapor analyzer results suggested that a small volume of contaminated soil lay near the water table at the location of monitoring well MW-4.
- Installed a temporary well (TW-1) near the product lines. The well contained a product sheen when sampled on February 21, 1996, but no additional product has been observed in wells on the site.
- Documented the removal and incineration of the contaminated soils.
- Surveyed nearby sites that may have contributed to the contamination.
- Surveyed nearby receptors, including public and private water supplies and surface water bodies.
- Installed 2 piezometers and 13 monitoring wells and sampled groundwater periodically. The wells were installed above and below a partially cemented sand layer that exists about 20 to 27 feet below ground surface.
- Determined the groundwater flow direction, hydraulic conductivity, hydraulic gradient, and soil transmissivity.

- Found organic contaminants in groundwater that exceeded Florida Department of Environmental Protection Groundwater Cleanup Levels. Groundwater samples from wells in the southwestern part of the site contained the highest concentrations of contaminants.

ABB Environmental Services, Inc., concluded that one of the four former underground storage tanks probably caused the contamination and recommended that screening at nearby sites be completed before taking additional actions at Building 2273.

Destruction of Monitoring Wells

City of Orlando construction crews destroyed several monitoring wells during utility construction performed in the spring of 1998, including four shallow wells, four deep wells, and two compliance wells. ABB Environmental Services, Inc., now owned by Harding Lawson Associates, recommended that the destroyed wells be properly abandoned and replaced with new wells.

Site Assessment, September 1999 to February 2001

Tetra Tech NUS, Inc., continued investigations at the site. Tetra Tech NUS, Inc., installed two new shallow wells and four new deep wells and performed periodic groundwater sampling. Analysis of the groundwater samples indicates that the contaminated zone lies in the southwest corner of the site, beneath the partially cemented sand layer described above. Tetra Tech NUS, Inc., also submitted soil samples for grain size analysis and had a registered surveyor provide accurate horizontal positions and top of casing elevations for the new monitoring wells.

Tetra Tech NUS, Inc., personnel performed a survey of the neighborhood south of Building 2273 to provide current information on land use and possible private wells in February 2001. Residents reported the presence of two drinking water wells at distances of approximately 0.18 and 0.28 miles southeast of the site. An irrigation well lies approximately 0.23 miles southeast of the site.

Recommendations

Although the concentrations of organics in groundwater have fallen significantly, recent sampling indicates that concentrations of some organics, particularly benzene, still exceed Groundwater Cleanup Target Levels. Tetra Tech NUS, Inc., recommends quarterly sampling of two downgradient wells, two upgradient wells, and one well in the source area and reevaluation of the conditions after one year of monitoring. Three additional monitoring wells should be installed to assure accurate monitoring of groundwater flow

and the chemical composition of groundwater below the surficial aquifer. A change of status to No Further Action will be appropriate if no concentrations in downgradient wells exceed Groundwater Cleanup Target Levels and concentrations in source wells meet approved milestone objectives the last two monitoring events. Tetra Tech NUS, Inc., also recommends properly abandoning monitoring wells MW-3 and CW-2, which were found during a recent sampling event.

1.0 INTRODUCTION

1.1 PURPOSE AND SCOPE

Tetra Tech NUS, Inc., (TtNUS) completed a Site Assessment at Building 2273, located at the former Naval Training Center (NTC), Orlando. The work was conducted for the U.S. Navy (Navy) Southern Division Naval Facilities Engineering Command (SOUTHDIV) under Contract Task Order 0024 for the Comprehensive Long-term Environmental Action Navy (CLEAN III), Contract Number N62467-94-D-0888. ABB Environmental Services, Inc. (ABB-ES), conducted previous studies at the site under Contract Number N62467-89-D-0317/107.

The purpose of the Site Assessment was to evaluate the environmental impacts of previous use of the site as a bulk storage facility for heating oil in accordance with the requirements of Chapter 62-770 *Petroleum Contamination Site Cleanup Criteria*, Florida Administrative Code (F.A.C.) (FDEP, 1999b). ABB-ES and TtNUS fulfilled this objective by taking the following actions:

- Reviewed available, applicable documents such as closure reports, discharge reports, and maintenance records.
- Surveyed nearby sites that may have led to contamination near Building 2273.
- Surveyed nearby receptors near Building 2273, including public and private water supplies and surface water bodies.
- Completed a surface and subsurface investigation, including the installation of monitoring wells, and soil and groundwater sampling.
- Determined groundwater flow direction, hydraulic conductivity, hydraulic gradient, and soil transmissivity.
- Replaced several monitoring wells that were destroyed during utility construction activities and installed additional wells to assure proper monitoring of the horizontal and vertical extent of groundwater contamination.

Additional details of the investigations and analytical results are presented in Sections 2.0 and 3.0. The discussions below compare observed contaminant concentrations to Florida Department of Environmental

Protection (FDEP) Groundwater Cleanup Target Levels (GCTLs) published May 26, 1999 (FDEP, 1999). Some previous reports cite GCTLs that were subsequently revised in the May 1999 document.

A Site Assessment Report Summary Sheet, as required by Chapter 62-770, F.A.C., is included in Appendix A.

1.2 DESCRIPTION AND SETTING

1.2.1 Location

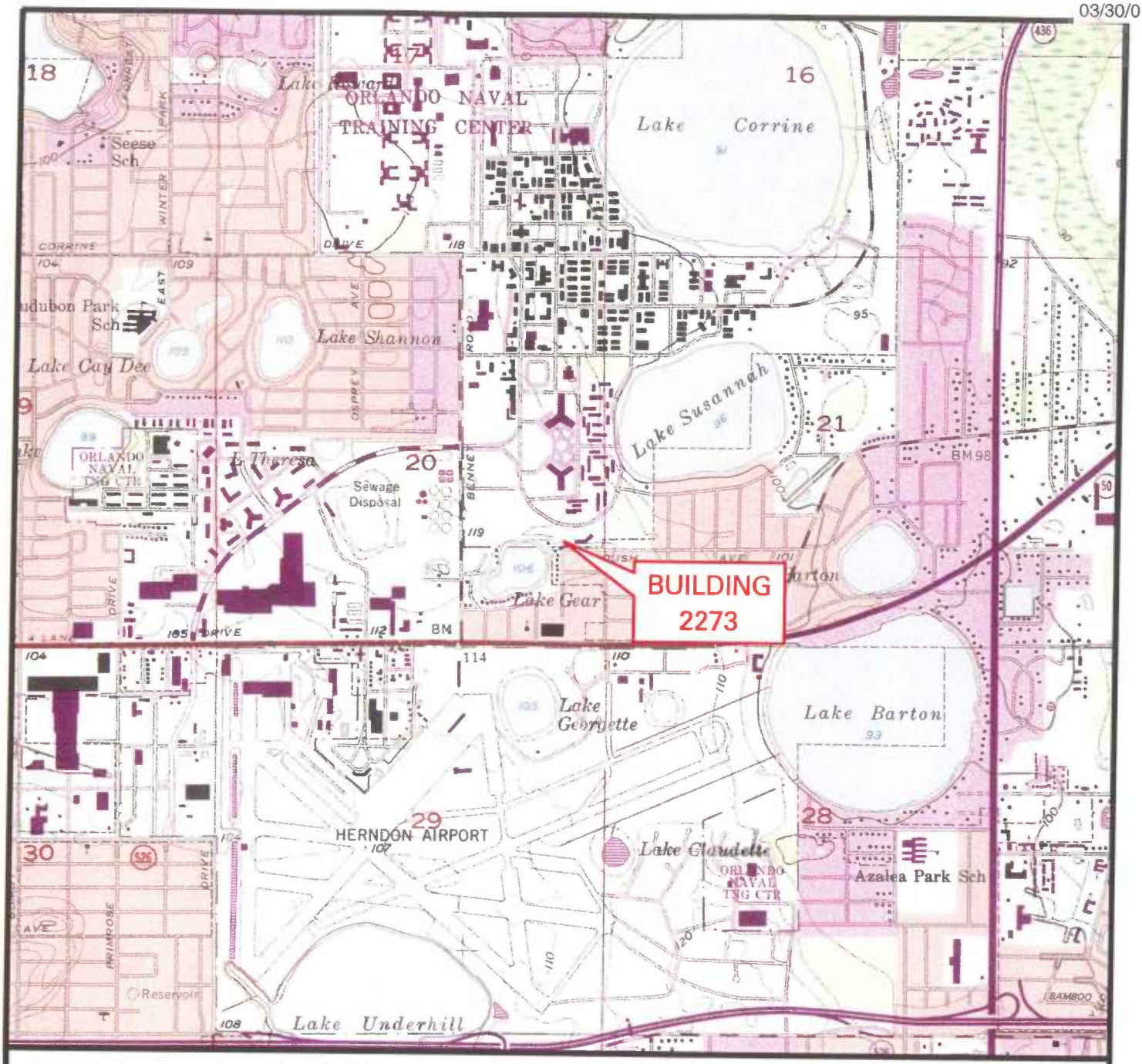
Building 2273 was the site of a former heating oil bulk storage facility at NTC, in Orange County, Florida. The site lies in the southeastern part of Section 20, Township 22 South, and Range 30 East. The area surrounding NTC is shown on the U.S. Geological Survey (USGS) Orlando East, Florida, 7.5-Minute Series quadrangle. A portion of the map is presented as Figure 1-1. (The lake named Lake Corrine on the map is now known as Lake Baldwin). Figure 1-2 shows the location of Building 2273 near the southern NTC boundary. The local area around Building 2273, including nearby private wells and significant commercial establishments, is shown in Figure 1-3. Figure 1-4 shows the location of Building 2273 on the site, the approximate former location of the underground storage tanks (USTs), and the locations of monitoring wells and underground utilities.

1.2.2 Site Description

Building 2273 was a one-story wooden structure built on a concrete foundation with a basement that contained the pumps used to transfer fuel from four 11,750-gallon USTs located immediately south of the building. Two of the USTs (2273-1 and 2273-2) were removed in 1993. No dissolved petroleum contamination was detected when existing compliance wells were sampled on August 15, 1995. The remaining USTs (2273-3 and 2273-4) were removed in January 1996 by Florida Petroleum Services, Inc., (FPS). Details are included in Appendix B of the Building 2273 Contamination Assessment Report (ABB-ES, 1997a). Contaminated soil and groundwater were observed when FPS removed the remaining USTs. No significant soil petroleum contamination was observed outside a small soil volume near the product and vent lines. A temporary well (TW-1) was installed near the product lines and a petroleum sheen was detected when TW-1 was sampled on February 21, 1996 (ABB-ES, 1997a).

1.2.3 Topography and Drainage

Most of Orlando, including NTC, lies in the Atlantic Coastal Plain physiographic province. NTC is in the highland topographic region of Orange County, where elevations generally exceed 105 feet above mean



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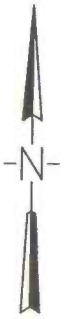
ORLANDO EAST, FLORIDA (1980 EDITION).



2000 0 2000
SCALE IN FEET

FIGURE 1-1

USGS TOPOGRAPHIC MAP
BUILDING 2273 - MAIN BASE
SITE ASSESSMENT REPORT

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

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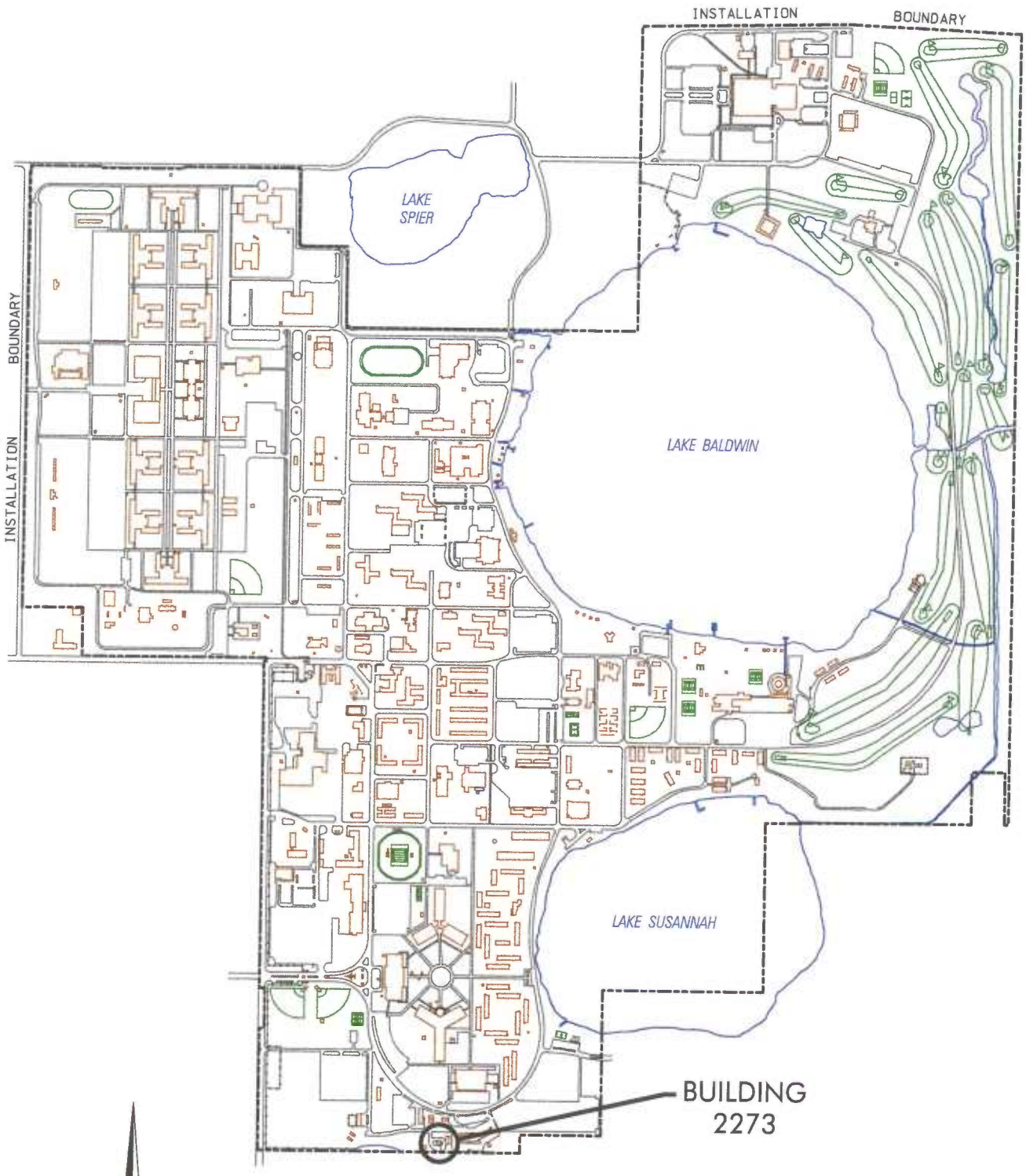

FIGURE 1-2

SITE VICINITY MAP
BUILDING 2273 - MAIN BASE
SITE ASSESSMENT REPORT

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

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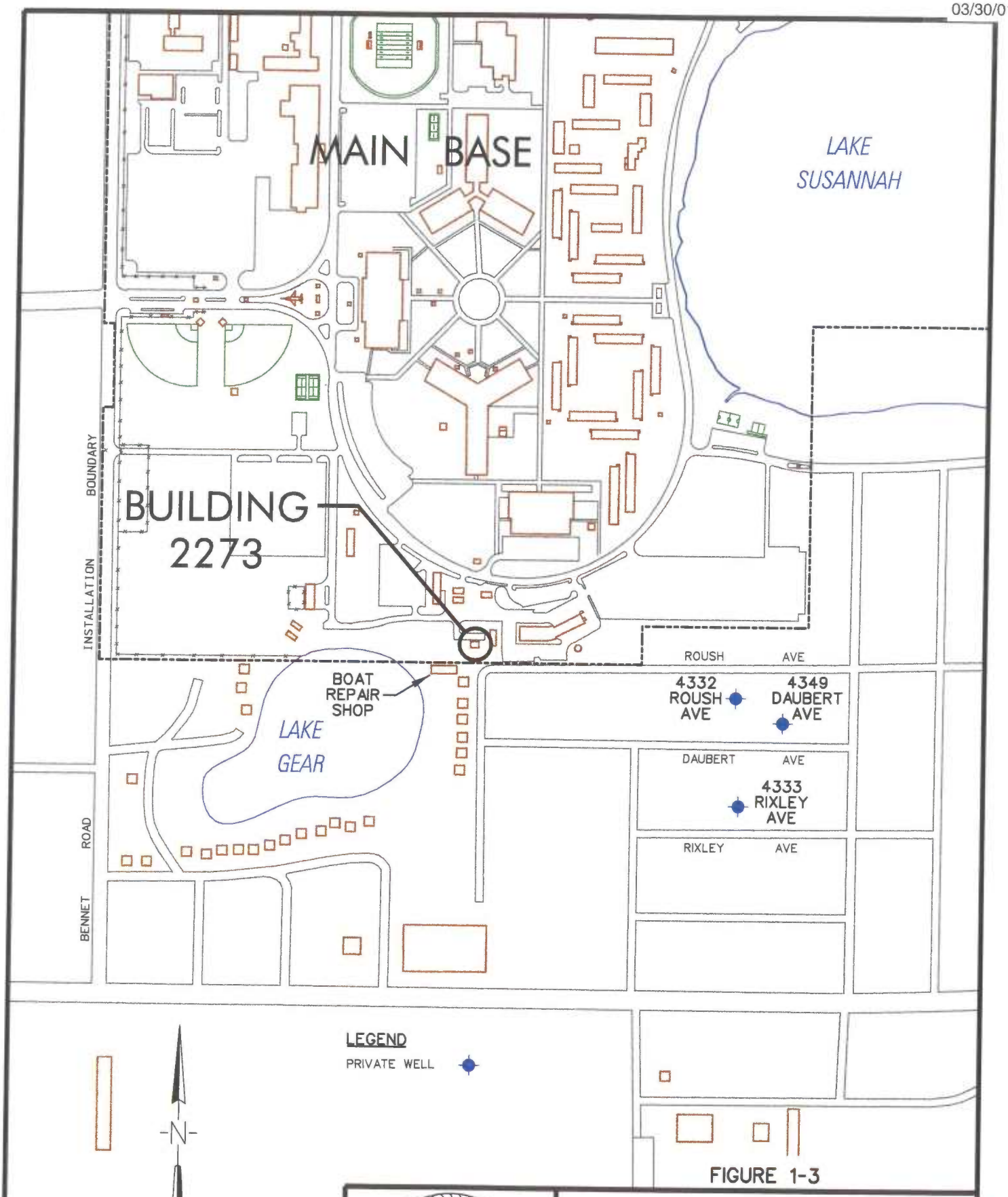

FIGURE 1-3

LOCAL AREA MAP
BUILDING 2273 - MAIN BASE
SITE ASSESSMENT REPORT

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

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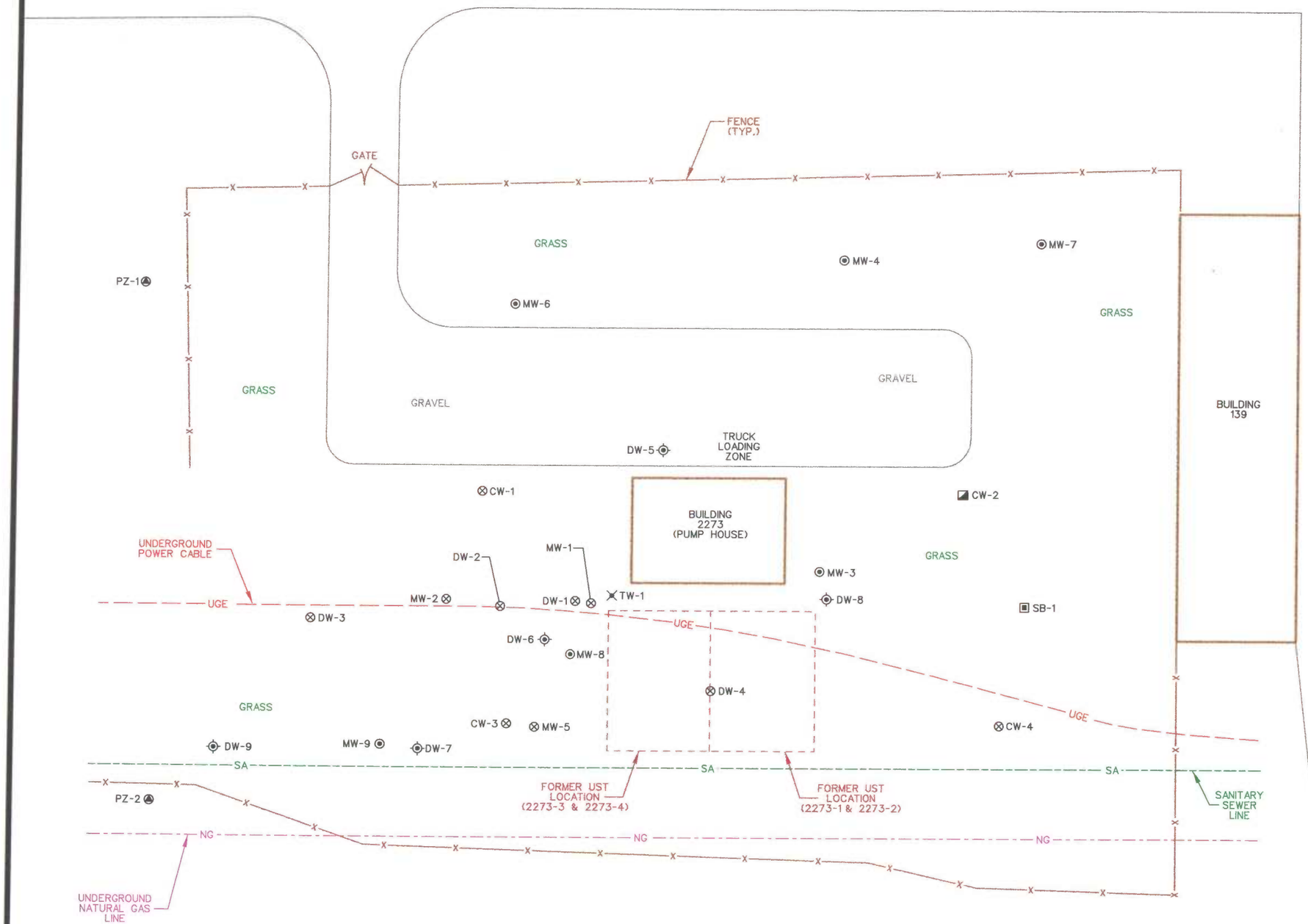


LEGEND

- MONITORING WELL
- DEEP MONITORING WELL
- COMPLIANCE WELL
- TEMPORARY WELL
- PIEZOMETER
- DESTROYED WELL
- SOIL BORING

-N-

20 0 20
SCALE IN FEET

FIGURE 1-4

SITE PLAN
BUILDING 2273 - MAIN BASE
SITE ASSESSMENT REPORT

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

n11x17b.dgn

sea level. The region contains many closed depressions and sinkhole lakes that contribute to groundwater recharge (Lichtler, Anderson, and Joyner, 1968). Regional drainage in the flat area surrounding Orlando is generally poor, with flow being generally to the south. Soils east of NTC are poorly drained, while soils to the north, south, and west are considered to be somewhat excessively drained to moderately well drained (C.C. Johnson & Associates, 1985).

The site is flat, with an average elevation of approximately 115 feet above mean sea level. Surface runoff flows to ditches along nearby streets. The well-drained soils and lack of relief at the site suggest that significant surface runoff occurs only during heavy or prolonged rainfall events.

1.2.4 Geology and Hydrology

Surface and near-surface deposits in the Orlando area are of primary interest to this assessment. The soils are mainly of the Lakeland-Eustis-Blanton-Orlando type, consisting of sands and clayey sands underlain by limestone. A typical soil profile, as described in well boring logs from the site, reveals gray and brown to black fine sand extending from the surface to a depth of about 30 feet below ground surface (bgs). The sand appears to be cemented with iron oxide from about 20 to 27 feet bgs. A gray to olive-green sandy clay is present below 30 feet bgs (ABB-ES, 1997a). Boring logs and well completion logs for wells installed by TtNUS are enclosed as Appendices B and C, respectively. No cross-section is provided because very little lithologic variation was observed during well installation.

Borings advanced during a site investigation at Study Area 39, adjacent to the Building 2273 site, indicated that the upper sediments of the Hawthorn Group lie about 80 feet bgs (TtNUS, 2000). The Hawthorn Group, which lies directly atop the Floridan Aquifer System, is considered to act as a confining layer and intermediate aquifer. Many sinkholes are present in the areas surrounding the facility, but no sinkholes have been reported on the NTC Main Base. Soil conditions at the Main Base are generally favorable for urban development.

The static level of groundwater typically lies at depths of about 12 feet bgs in the wells screened across the water table and 15 to 16 feet bgs in the wells screened beneath the partially cemented sands. The lower groundwater levels observed in wells screened below the partially cemented layer suggest that conditions on-site or nearby create a downward component of groundwater flow. Groundwater flows from east-northeast to west-southwest in the uppermost portion of the surficial aquifer, while groundwater beneath the partially cemented layer appears to flow to the southeast. Soil variations, the presence of a cemented or partially cemented sand layer, and the hydraulic effects of nearby lakes may cause

groundwater flow directions to differ above and below the partially cemented sand layer. Additional details regarding flow direction and vertical gradients are provided in Section 3.1, Site-Specific Hydrogeology.

1.2.5 Land Use

The NTC Main Base occupies about 1,095 acres and extends approximately 1.5 miles north of the site. The Main Base lies within the Orlando Standard Metropolitan Statistical Area, which includes Orange, Osceola, and Seminole Counties. The predominant land use surrounding NTC is residential, although commercial property borders most of the major nearby roads. Several large lakes lie within a radius of 3 miles. Orlando Executive Airport lies approximately 1.5 miles south of the Main Base.

TtNUS personnel surveyed the area around the south end of the NTC Main Base on February 10, 2001, to document current land use. They found the major streets, Colonial Drive and Bennett Road, to be lined with commercial development. A large shopping complex lies immediately west of Bennett Road. Residences line the smaller streets, and an apartment complex lies west and south of Lake Gear. A bicycle and walking path lie immediately south of the site boundary. A boat repair and maintenance shop (Figure 1-3) lies on the northeast edge of Lake Gear, approximately 100 feet southwest of the site. Personnel observed seven drums of compounds used in boat repair at the shop.

Since its opening in 1940, the Main Base has served as a training facility. Therefore, barracks, training areas, and associated administrative areas dominated land use on the base. The facility was first used by the U.S. Army, then the U.S. Air Force, and later by the U.S. Navy. Building 2273 was one of the many areas that supported the training missions of the armed forces.

Study Area 30 lies east of the site and Study Area 39 lies approximately 500 feet to the west. Building 139, a pesticide shed that is part of Study Area 30, lies immediately east of the site. These two study areas have been the subjects of separate environmental investigations. The results of these investigations, as they relate to Building 2273, are summarized in Section 3.0.

1.2.6 Potable Water Well Survey

The results of a potable water survey for the area surrounding Building 2273 are presented in the NTC Main Base Contamination Assessment Report (ABB-ES, 1996). Two active wells owned and operated by the Orlando Utility Commission are nearby: WW-12 lies 0.7 mile northeast (upgradient) and WW-13 lies 1.2 miles southwest (downgradient). Potable water well WW-9, which lies approximately 0.7 mile from the site, was inactive at the time of the investigation. The following irrigation wells lie near the site:

- WW-4 is 2,750 feet northwest.
- WW-5 is 2,250 feet north.
- WW-6 is 500 feet northwest.

TtNUS personnel visited the area south of the site on February 12, 2001. They conducted an informal survey, looking for well houses and asking residents if they knew of potable water or irrigation wells nearby. They were told of the following wells near the site (Figure 1-3):

- A potable water well at 4332 Roush Avenue. This well lies approximately 0.18 mile southeast of the site.
- A potable water well at 4333 Rixey Street. This well lies approximately 0.23 mile southeast of the site.
- An irrigation well at 4349 Daubert Street. This well lies between the two potable water wells described above.

Another irrigation well observed on the south side of Lake Gear is unlikely to be influenced by groundwater from Building 2273.

1.2.7 Surface Water

Lake Gear, 200 feet southwest of the site, is the nearest body of surface water. Lake Susannah (1,000 feet northeast), Lake Georgette (1,250 feet south), Little Lake Barton (2,560 feet south), and Lake Baldwin (4,200 feet northeast) are the nearest of numerous other lakes in the area.

1.3 BACKGROUND

1.3.1 Site History and Operations

The NTC Main Base has served military needs since it opened as an Army Air Corps facility in 1940. The Air Force assumed command in 1947 and operation was transferred to the Navy in 1968. The Base Realignment and Closure program scheduled the facility for closure in 1999. In recent years, the Main Base has served as a training facility for new and recently graduated recruits.

Building 2273 was a fuel distribution facility providing heating oil to other facilities on the base. Pumps in a 15- to 18-foot-deep basement pumped fuel into a 3,000-gallon Navy tanker for distribution throughout

NTC. Contaminated fuel from various facilities was returned to Building 2273 for storage in a 300-gallon waste oil browser.

1.3.2 Underground Storage Tank Removal and Closure Assessment

Little or no documentation of the removal of Tanks 2273-1 and 2273-2 in 1993 is available. A Tank Closure Assessment Report presented as Appendix B of the Building 2273 Contamination Assessment Report (ABB-ES, 1997a) describes the removal of tanks 2273-3 and 2273-4 in detail. The following highlights are excerpted from the Tank Closure Report.

- Tanks 2273-3 and 2273-4 were removed in January 1996.
- FPS certified that the tanks were removed as specified in American Petroleum Institute document 1604 and in accordance with Section 17-761.800, F.A.C.
- Approximately 78 soil samples collected from areas surrounding the tanks, product lines, and vent lines were subjected to organic vapor analyses. No significant soil petroleum contamination was observed outside a small soil volume near the product and vent lines.
- Approximately 2 cubic yards of soil from the area near the product and vent lines were segregated for incineration. The results of pre-burn and post-burn analyses show that the soil was properly incinerated.
- Groundwater samples were collected from four compliance wells surrounding the tank pit and analyzed for organic compounds. Samples were subjected to the Kerosene Analytical Group (KAG) suite of analyses which includes U.S. Environmental Protection Agency (USEPA) Methods 504 (ethylene dibromide), 601 (volatile organic halocarbons), 602 (volatile organic aromatics), 239.2 (total lead), 610 [polynuclear aromatic hydrocarbons (PAHs)], and 418.1 [total recoverable petroleum hydrocarbons (TRPH)]. Lead, found in CW-1, CW-2, and CW-4, was the only chemical detected.
- ABB-ES installed a temporary well (TW-1) near the product and vent lines. Groundwater sampling conducted in February 1996 revealed a product sheen in TW-1 and approximately 0.75 gallon of product was bailed from the well. Observed concentrations of ethylbenzene, total volatile organic compounds (VOCs), and total xylenes exceeded current GCTLs.
- ABB-ES recommended additional investigation and preparation of a contamination assessment report.

Observed concentrations of contaminants exceeding GCTLs are discussed in Section 3.0.

2.0 SUBSURFACE INVESTIGATION METHODS

2.1 CONTAMINATION ASSESSMENT, JULY 1996 TO MARCH 1997

ABB-ES performed a contamination assessment to evaluate the soil and groundwater conditions at the former heating oil bulk storage fuel farm (ABB-ES, 1997a). A brief summary follows.

- Ninety soil samples from 24 hand auger locations were collected site-wide to determine the extent of soil contamination. Organic vapor analyzer (OVA) results indicated that an isolated volume of petroleum-impacted soil lay near the water table at the present location of monitoring well MW-04.

- Two piezometers (PZ-1 and PZ-2) were installed to a depth of 9 feet to help determine the groundwater flow direction (in conjunction with elevations measured in the four existing compliance wells). The piezometers were installed just outside the site boundary at locations near the northwest and southwest corners of the site.

- Seven shallow monitoring wells (MW-1 through MW-7) were installed. The wells were constructed of 2-inch diameter polyvinyl chloride (PVC), approximately 15 feet deep, with 10 feet of 0.010-inch slotted well screen. The screened intervals were selected to encompass the anticipated seasonal water level fluctuations. All wells were flush mounted, with locking caps, surface well boxes, and protective covers. Boring logs and well completion details are provided in Appendices C and D of the Contamination Assessment Report (ABB-ES, 1997a). The screened intervals lay above a partially cemented soil layer that was observed at depths of 20 to 27 feet. Water level measurements from these wells should be representative of a shallow, unconfined aquifer.

- Three deep wells (DW-1, DW-2, and DW-3) were installed. Each deep well was double cased with 6-inch PVC casing cemented to depths of 20 feet, 30 feet, and 20 feet, respectively, to prevent groundwater flow between the shallow and deep zones. Each deep well had a 2-inch-diameter PVC inner well casing inside a 6-inch-diameter PVC outer casing and 5 feet of 0.010-inch slotted well screen. All wells were flush mounted, with locking caps, surface well boxes, and protective covers. Total well depths were 32 feet, 45 feet, and 30 feet, respectively. Boring logs and well completion details are provided in Appendices C and D of the Building 2273 Contamination Assessment Report (ABB-ES, 1997a).

The screened intervals lay below a partially cemented layer that was observed at depths of 20 to 27 feet bgs. Water level measurements from these wells may be representative of a confined or partially confined aquifer.

- Groundwater elevations were measured in December 1996, January 1997, and February 1997. (ABB-ES reported relative groundwater elevations based on an assumed top of casing elevation of 100.00 feet at MW-1.) Relative groundwater elevations in the seven shallow monitoring wells (MW-1 through MW-7) and four compliance wells (CW-1 through CW-4) ranged from 90.67 to 92.22 feet, with the highest elevations being observed in December 1996. Relative elevations in the three deep monitoring wells (DW-1 through DW-3) ranged from 85.19 to 90.23 feet.

- Evaluation of the site stratigraphy and hydrogeology was limited to the surficial aquifer beneath the site. Gray, brown, and black fine sands were found to a depth of 30 feet bgs. From 20 to 27 feet bgs, the sand was dense and appeared to be partially cemented with iron oxide. A gray to olive-green clayey sand was present from 30 to 47 feet bgs.

- Rising-head aquifer slug tests were conducted in monitoring wells MW-1, MW-2, DW-1, and DW-2 to provide data for calculating a representative hydraulic conductivity for the aquifer beneath the site.

- ABB-ES observed or calculated the following hydraulic characteristics for the site:

  - The shallow groundwater flow direction is generally from east-northeast to west-southwest.
  - The hydraulic gradient is approximately 1.06×10^{-2} feet per foot.
  - The hydraulic conductivity is estimated to be 3.29 feet per day.
  - The estimated groundwater flow velocity is 36.5 feet per year.
  - The transmissivity is 861 gallons per day per foot.

- ABB-ES conducted groundwater sampling on the following dates:

  - Wells CW-1 through CW-4 were sampled on August 15, 1995.
  - Well TW-1 was sampled on February 21, 1996.
  - Wells MW-1, MW-2, and MW-3 were sampled on July 25, 1996.
  - MW-4, MW-5, and DW-1 were sampled on October 1, 1996.
  - MW-6, MW-7, DW-2, and DW-3 were sampled on December 9, 1996.
  - DW-1, DW-2, and DW-3 were sampled on January 2, 1997.
  - Analytical results are discussed in Section 3.0.

- Two active potable wells were identified in the site vicinity (one 0.7 mile upgradient; one 1.2 miles downgradient). Both wells are owned and operated by the Orlando Utilities Commission.

The principal concerns at this stage of the investigation were the elevated concentrations of ethylbenzene, total VOCs, and total xylenes in an area around monitoring wells MW-1, DW-1, and DW-2. In addition, benzene concentrations exceeding the GCTL were observed at wells MW-4 and DW-2.

2.2 ADDITIONAL CONTAMINATION ASSESSMENT, JUNE 1997 TO SEPTEMBER 1997

ABB-ES recommended overdevelopment of monitoring wells MW-1, DW-1, and DW-2 to attempt to lower contaminant concentrations near those wells and resampling of all wells on the site. The FDEP responded, recommending the installation of two additional monitoring wells, DW-4 and DW-5, screened at approximately the same depth as DW-1. One well was to be placed to the southeast of well DW-1 and the other well to the north-northeast to better determine the direction of groundwater flow. FDEP also requested that all deep wells be sampled and analyzed for the KAG analytes (FDEP, 1997).

Double-cased deep monitoring wells DW-4 and DW-5 were installed on June 5 and 6, 1997. DW-4 was installed about 20 feet south of Building 2273, near the center of the former tank pit. DW-5 was installed about 20 feet north of Building 2273. Each well was 32 feet deep, screened from 27 to 32 feet bgs and constructed in the same manner as deep wells DW-1 through DW-3. The groundwater flow direction in the aquifer at the elevation of the deep monitoring wells was interpreted to be similar to that in the shallow groundwater: east-northeast to west-southwest (ABB ES, 1997b).

The five deep monitoring wells were sampled in June 1997. The significant results of the June 1997 resampling are as follows.

- Concentrations of total VOCs and total xylenes at DW-1 and DW-2 were higher than those found during the January 1997 sampling and exceeded GCTLs.
- Benzene was detected in the sample from DW-2 at a concentration above the GCTL.
- The concentration of 2-methylnaphthalene exceeded its GCTL at DW-5.

ABB-ES concluded that one of the former USTs was the source of petroleum contamination and suggested that leaks, overfills, or spills might have been responsible. The presence of chlorinated compounds suggested that an off-site source might have contributed to site contamination. ABB-ES declined to recommend pumping to enhance recovery because of the possibility of inducing a flow of

contaminants from off-site areas. ABB-ES planned to conduct site screening at Building 139, immediately east of the site, and recommended awaiting the results of that site screening before taking further action at Building 2273. Building 139 was included in the Study Area 30 site screening investigation (HLA, 1998a).

2.3 UTILITY CONSTRUCTION DAMAGE TO MONITORING WELLS

In the spring of 1998, the City of Orlando or its contractors damaged or destroyed several wells during construction activities within a utility corridor located along the southern property line of the Main Base. Harding Lawson Associates (HLA) reported that the destroyed wells included three shallow wells (MW-1, MW-2, and MW-5), four deep wells (DW-1, DW-2, DW-3, and DW-4), and three compliance wells (CW-1, CW-3, and CW-4). HLA recommended that the destroyed wells at Building 2273 be properly abandoned and replaced with new wells (HLA, 1998b).

2.4 ADDITIONAL CONTAMINATION ASSESSMENT, SEPTEMBER 1999 TO SEPTEMBER 2000

TtNUS prepared a Work Plan to abandon the destroyed wells and install two new shallow monitoring wells and three new deep monitoring wells (TtNUS, 1999). The Work Plan provided for one additional shallow well and two additional deep wells if TtNUS and the Orlando Partnering Team (OPT) agreed that they were needed. Table 2-1 presents a summary of monitoring well status.

2.4.1 Objectives and Guidance

The approved TtNUS Work Plan stated the following objectives:

- Properly abandon the eight damaged or destroyed monitoring wells and the four compliance monitoring wells CW-1 through CW-4 (UST monitoring was no longer required).
- Install new monitoring wells to replace the damaged wells and further characterize the extent of contamination.
- Purge and sample the newly installed wells and selected existing wells.

All work was performed following guidance detailed in the *Project Operations Plan for Site Investigation and Remedial Investigations* [POP], Volume I (ABB-ES, 1997c). Health and safety aspects of the work at Building 2273 were controlled in accordance with the *Health and Safety Plan for Completion of Investigative Work and Data Sampling* (B&R Environmental, 1997) and addenda. Appendix D contains a list of TtNUS field personnel.

TABLE 2-1

WELL CONSTRUCTION DETAILS
BUILDING 2273

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Well No.	Date Installed	Installation Method	Top of Casing Elevation[a]	A/G Riser Length, if Applicable	Total Well Depth (feet)	Screened Interval (FBGS)	Well Diameter (in.)	Lithology of Screened Interval	Comments
MW-1	07/10/96	HAS	115.32	NA	14	4 - 14	2	Sand	Destroyed
MW-2	07/10/96	HAS	115.14	NA	14	4 - 14	2	Sand	Destroyed
MW-3	07/10/96	HAS	115.22	NA	15	4 - 14	2	Sand	
MW-4	09/24/96	HAS	114.76	NA	15	5 - 15	2	Sand	
MW-5	09/24/96	HAS	115.43	NA	15	5 - 15	2	Sand	Destroyed
MW-6	11/22/96	HAS	114.94	NA	15	5 - 15	2	Sand	
MW-7	11/22/96	HAS	114.57	NA	15	5 - 15	2	Sand	
MW-8	09/08/99	HAS	119.37	3	15	5 - 15	2	Sand	
MW-9	09/09/99	HAS	118.68	3	15	5 - 15	2	Sand	
DW-1	09/24/96	mud rotary	115.31	NA	32	27 - 32	2	Sand	Destroyed
DW-2	11/27/96	mud rotary	115.40	NA	45	40 - 45	2	Sand	Destroyed
DW-3	11/27/96	mud rotary	115.30	NA	30	25 - 30	2	Sand	Destroyed
DW-4	06/06/97	mud rotary	115.87	NA	32	27 - 32	2	Sand	Destroyed
DW-5	06/06/97	mud rotary	115.57	NA	32	27 - 32	2	Sand	
DW-6	09/22/99	HAS/MR	118.74	3	32	27 - 32	2	Sand	
DW-7	09/22/99	HAS/MR	118.38	3	32	27 - 32	2	Sand	
DW-8	9/8-9/99	HAS/MR	119.60	3	32	27 - 32	2	Sand	
DW-9	4/11-12/00	HAS/MR	118.42	3	32	27 - 32	2	Sand	
TW-1	unknown	unknown	unknown	NA	unknown	unknown		Sand	
CW-1	unknown	unknown	115.33	NA	12	unknown	4	Sand	Destroyed
CW-2	unknown	unknown	115.43	NA	14	unknown	4	Sand	
CW-3	unknown	unknown	115.31	NA	13	unknown	4	Sand	Destroyed
CW-4	unknown	unknown	115.39	NA	14	unknown	4	Sand	Destroyed

FBGS - Feet below ground surface

HAS - Hollow stem auger

HAS/MR - Hollow stem auger/mud rotary

NA - Not applicable

(a) HLA assigned an elevation of 100 feet above mean sea level to the MW-1 top of casing and measured the elevations of MW-2 through MW-7 and DW-1 through DW-9 relative to that assigned elevation. TtNUS resurveyed the wells relative to well DW-8.

2.4.2 Well Abandonment

TtNUS planned to abandon the remaining compliance wells and damaged monitoring wells in accordance with the guidelines of the St. John's River Water Management District and Chapter 40A-3 for the F.A.C. Field personnel were unable to locate the wells that were to be abandoned and concluded that the utility crews had removed the upper portions of the casings and backfilled over the former borings. No borings were abandoned. Later, sampling personnel located wells MW-3 and CW-2. The concrete surface pad for well MW-3 had settled and was covered with soil, but the well casing was undamaged. TtNUS recommends that wells MW-3 and CW-2 be abandoned.

2.4.3 New Well Installation

TtNUS installed wells MW-8, MW-9, DW-6, DW-7, and DW-8 in early September 1999. Figure 1-4 shows the locations of the original monitoring and compliance wells and the new monitoring wells installed in September 1999. Shallow wells MW-8 and MW-9 were installed near deep wells DW-6 and DW-7, respectively, to create well pairs. TtNUS installed wells DW-6 and DW-7 downgradient of the former tank pit and DW-8 upgradient of the tank pit to improve the assessment of groundwater flow direction and gradient in the zone below the partially cemented layer at approximately 20 to 27 feet bgs.

Upon review of hydraulic and analytical data from the new wells, the OPT elected to install one additional deep well (DW-9) in the southwest corner of the site. That downgradient location was selected to assist in assessing the groundwater flow regime and provide an additional monitoring point near the site boundary. TtNUS installed well DW-9 on April 11 and 12, 2000, using the same construction as that used at wells DW-6, DW-7, and DW-8. Figure 1-4 shows the locations of all wells installed at the site.

Boring logs and well completion logs are provided as Appendices B and C, respectively. Two-inch-diameter Schedule 40 PVC casings and screens were used for all new wells. Shallow wells have 10 feet of 0.010-inch slotted screen and deep wells have 5 feet of 0.010-inch slotted screen. Deep wells have an outer casing of 6-inch-diameter Schedule 80 PVC grouted into the partially cemented sand layer to prevent groundwater flow between the shallow unconfined aquifer and the deeper, partially confined aquifer. Each new well casing extends approximately 3 feet above grade.

Each of the new wells has a lockable, protective steel casing grouted in place and surrounded by a 3-foot by 3-foot by 6-inch concrete pad. The pads are sloped to drain water away from the protective casings. Each well was developed, labeled, and locked in accordance with the POP (ABB-ES, 1997c).

2.4.4 Soil Sampling

Seven soil samples from the boring for well DW-6 and two soil samples from the boring for well DW-8 were submitted to Universal Engineering Services in Orlando for grain size analyses. The following table shows the sample depths for the grain size samples. The shallower samples from the DW-6 boring and the deeper samples from DW-8 were selected to help characterize the lithology above and below the partially cemented sand layer that separates the unconfined and partially confined aquifers.

SAMPLES COLLECTED FOR GRAIN SIZE ANALYSIS

Well Boring Number	Sample Number	Date	Depth (feet below grade)
DW-6	NTC2273DW60002	9/8/99	0 to 2
DW-6	NTC2273DW60810	9/8/99	8 to 10
DW-6	NTC2273DW61012	9/8/99	10 to 12
DW-6	NTC2273DW61820	9/8/99	18 to 20
DW-6	NTC2273DW62224	9/8/99	22 to 24
DW-6	NTC2273DW62628	9/8/99	26 to 28
DW-6	NTC2273DW62830	9/8/99	28 to 30
DW-8	NTC2273DW83840	9/9/99	38 to 40
DW-8	NTC2273DW84042	9/9/99	40 to 42

The grain size analyses are discussed in Section 3.0. A copy of the laboratory report is presented in Appendix E.

2.4.5 Groundwater Sampling

The new wells (MW-8, MW-9, DW-6, DW-7, DW-8, and DW-9) and existing wells MW-4 and DW-5 were purged and sampled on September 30 through October 2, 1999, in accordance with the Work Plan (TtNUS, 1999) and as required by the POP (ABB-ES, 1997c). Purging employed the micro-flow technique to minimize well disturbance. Where possible, the purge flow rate was kept at or below 100 mL per minute. Samplers monitored temperature, specific conductance, pH, oxidation/reduction potential, dissolved oxygen, and turbidity. Purging continued until each parameter stabilized within limits established in the TtNUS Work Plan or until stopped by the field manager. The manager stopped purging at MW-4 after 165 minutes when all parameters except turbidity had stabilized. Groundwater sample log sheets are enclosed as Appendix F. Chain-of-custody forms are enclosed as Appendix G. All samples were packed on ice and shipped via Federal Express overnight delivery to the analytical laboratory.

Quanterra Environmental Services (Quanterra) in North Canton, Ohio, analyzed the groundwater samples. Samples from all wells were analyzed for Target Compound List (TCL) VOCs. The sample from MW-8

was also analyzed for methyl *tert*-butyl either (MTBE) and TRPH. Samples from wells DW-5 and DW-8 were also analyzed for PAHs.

TtNUS sampled the groundwater in well DW-9 on April 17 and June 12, 2000, using the same purging and sampling techniques employed in earlier sampling. Quanterra analyzed the samples for TCL VOCs using Method 8260B.

TtNUS sampled wells MW-4, MW-8, MW-9, DW-5, DW6, DW-7, DW-8, and DW-9 on November 30, 2000, using the same purging techniques as in previous events and forwarded the samples to Severn Trent Laboratory for analysis. Each sample was analyzed for TCL VOCs, and the sample from well DW-8 was analyzed for MTBE using SW-846 Method 8260B. The sample from well DW-8 was analyzed for PAHs using SW-846 Method 8310 and for TRPH using the Florida PRO method.

Organic data validation was conducted in accordance with *USEPA Contract Laboratory Program: National Functional Guidelines for Organic Data Review* (USEPA, 1999). Sampling results are discussed in Section 3.0. Appendix H presents the validated analytical data from sampling performed by TtNUS.

No free product has been detected in wells at the site since the February 1996 detection in temporary well TW-1.

2.4.6 Surveying

A registered surveyor from the firm of Donaldson, Garrett & Associates surveyed the horizontal position (northing and easting), top of casing elevation, and ground surface elevation of each of the new wells. A TtNUS registered geologist measured the elevations of the tops of well casings installed by ABB-ES relative to well DW-8 on September 18, 2000, to provide actual elevations for all remaining wells. The survey data are provided in Appendix I.

3.0 RESULTS OF INVESTIGATIONS

3.1 SITE-SPECIFIC HYDROGEOLOGY

3.1.1 Lithology

Borings revealed gray, brown, and black fine sands from the ground surface to a depth of 30 feet bgs. From 20 to 27 feet bgs, the sand was dense and appeared to be partially cemented with iron oxide. A gray to olive-green clayey sand was present from 30 to 47 feet bgs. Borings at an adjacent site, Study Area 39, indicated that the upper sediments of the Hawthorn Group lie about 80 feet bgs. TtNUS collected samples for grain size analysis during the installation of deep wells DW-6 and DW-8. The results are presented in Table 3-1.

3.1.2 Aquifer Characteristics

ABB-ES reported the following observed and calculated hydraulic characteristics for the site (ABB-ES, 1997a).

- The groundwater flow direction is generally from east-northeast to west-southwest.
- The hydraulic gradient is approximately 1.06×10^{-2} feet per foot.
- The hydraulic conductivity is estimated to be 3.29 feet per day.
- The assumed groundwater flow velocity is 36.5 feet per year.
- The transmissivity is 861 gallons per day per foot.

Table 3-2 is a summary of groundwater elevation measurements. Figures 3-1 and 3-2 are groundwater elevation contour maps based on measurements made on November 30, 2000. Previous groundwater elevation data prepared using measurements from deep wells DW-1, DW-2, DW-3, DW-4 and DW-5 showed a west or southwest flow direction in the deep aquifer zone that was similar to the shallow aquifer zone flow direction. Recent groundwater elevation data (i.e., September 2000) prepared using measurements from deep wells DW-5, DW-6, DW-7, DW-8, and DW-9 indicate a southeast flow direction in the deep zone that differs from the shallow aquifer zone (see Figures 3-1 and 3-2).

The aquifer interval monitored by the deep monitoring wells (i.e., 27 to 32 feet bgs) is described as a cemented sand that grades downward into a sandy clay. As such, the material in which the deep wells are screened appears to have lower conductivity than the overlying zone in which the shallow wells are screened. Grain size analysis data (Table 3-1), the boring log from deep well DW-8, and observations of the deeper strata from other sites at the Main Base that have deep borings/wells indicate that a more

TABLE 3-1

GRAIN SIZE ANALYSES
BUILDING 2273

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Well Number	DW-6	DW-6	DW-6	DW-6	DW-6	DW-6	DW-6	DW-8	DW-8
Sample Depth (feet)	0 - 2	8 - 10	10 - 12	18 - 20	22 - 24	26 - 28	28 - 30	38 - 40	40 - 42
Sieve Number	Percent of Sample Passing Through Sieve								
3.4 inch	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Number 4	100.0	99.8	100.0	100.0	100.0	100.0	100.0	100.0	97.8
Number 10	99.5	99.5	100.0	100.0	100.0	100.0	100.0	100.0	97.7
Number 40	94.7	94.2	97.5	96.2	92.3	95.9	96.8	99.6	94.2
Number 60	71.2	66.3	76.2	63.4	48.6	75.3	88.5	96.4	77.4
Number 100	19.7	12.8	13.7	14.1	10.9	30.5	66	58	31.9
Number 200	6.3	11.1	4.5	5.3	4.8	12.5	44.1	11.6	8.5
	Other Parameters								
Moisture Content (%)	9.4	8.4	21.2	21.4	19.8	19.2	23	30.7	14
% Gravel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
% Sand	93.7	88.7	95.5	94.7	95.2	87.5	55.9	88.4	89.3
% Silt and Clay	6.3	11.1	4.5	5.3	4.8	12.5	44.1	11.6	8.5

TABLE 3-2

GROUNDWATER ELEVATIONS SUMMARY
BUILDING 2273

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Well	Well Type	Total Depth (BGS)	Screen Interval (BGS)	TOC Elevation (AMSL)[(a)]	12/9/96		1/21/97		2/12/97		6/24/97	
					Depth to Water (BTOC)	Groundwater Elevation (AMSL)	Depth to Water (BTOC)	Groundwater Elevation (AMSL)	Depth to Water (BTOC)	Groundwater Elevation (AMSL)	Depth to Water (BTOC)	Groundwater Elevation (AMSL)
MW-1	2" well	14	4-14	115.32	8.45	106.87	9.33	105.99	9.65	105.67	9.80	105.52
MW-2	2" well	14	4-14	115.14	8.30	106.84	9.19	105.95	9.51	105.63	9.68	105.46
MW-3	2" well	15	4-14	115.22	7.77	107.45	8.60	106.62	8.90	106.32	8.94	106.28
MW-4	2" well	15	5-15	114.76	7.33	107.43	8.14	106.62	8.41	106.35	8.36	106.40
MW-5	2" well	15	5-15	115.43	8.51	106.92	9.36	106.07	9.61	105.82	9.80	105.63
MW-6	2" well	15	5-15	114.94	7.91	107.03	8.81	106.13	9.17	105.77	9.21	105.73
MW-7	2" well	15	5-15	114.57	7.03	107.54	7.84	106.73	8.13	106.44	7.94	106.63
MW-8	2" well	15	5-15	119.37	NI		NI		NI		NI	
MW-9	2" well	15	5-15	118.68	NI		NI		NI		NI	
DW-1	2" well	32	27-32	115.31	12.15	103.16	12.88	102.43	13.15	102.16	13.34	101.97
DW-2	2" well	45	40-45	115.40	13.13	102.27	13.95	101.45	14.19	101.21	13.50	101.90
DW-3	2" well	30	25-30	115.30	9.75	105.55	10.61	104.69	10.93	104.37	11.31	103.99
DW-4	2" well	32	27-32	115.87	NI		NI		NI		13.04	102.83
DW-5	2" well	32	27-32	115.57	NI		NI		NI		11.84	103.73
DW-6	2" well	32	27-32	118.74	NI		NI		NI		NI	
DW-7	2" well	32	27-32	118.38	NI		NI		NI		NI	
DW-8	2" well	32	27-32	119.60	NI		NI		NI		NI	
DW-9	2" well	32	27-32	118.42	NI		NI		NI		NI	
CW-1	4" well	12	NA	115.33	8.46	106.87	9.35	105.98	9.71	105.62	9.88	105.45
CW-2	4" well	14	NA	115.43	7.84	107.59	8.63	106.80	8.92	106.51	8.84	106.59
CW-3	4" well	13	NA	115.31	8.40	106.91	9.26	106.05	9.60	105.71	9.72	105.59
CW-4	4" well	14	NA	115.39	7.74	107.65	8.41	106.98	8.62	106.77	8.46	106.93

TABLE 3-2

GROUNDWATER ELEVATIONS SUMMARY
BUILDING 2273

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Well	Well Type	Total Depth (BGS)	Screen Interval (BGS)	TOC Elevation (AMSL)[a]	9/30/99		9/18/00		11/30/00	
					Depth to Water (BTOC)	Groundwater Elevation (AMSL)	Depth to Water (BTOC)	Groundwater Elevation (AMSL)	Depth to Water (BTOC)	Groundwater Elevation (AMSL)
MW-1	2" well	14	4-14	115.32	DES		DES		DES	
MW-2	2" well	14	4-14	115.14	DES		DES		DES	
MW-3	2" well	15	4-14	115.22	8.37	106.85	NM		NM	
MW-4	2" well	15	5-15	114.76	6.99	107.77	7.88	106.88	9.00	105.76
MW-5	2" well	15	5-15	115.43	DES		DES		DES	
MW-6	2" well	15	5-15	114.94	NM		8.73	106.21	10.00	104.94
MW-7	2" well	15	5-15	114.57	NM		7.30	107.27	8.45	106.12
MW-8	2" well	15	5-15	119.37	11.97	107.40	13.27	106.10	14.50	104.87
MW-9	2" well	15	5-15	118.68	17.53	101.15	12.35	106.33	13.54	105.14
DW-1	2" well	32	27-32	115.31	DES		DES		DES	
DW-2	2" well	45	40-45	115.40	DES		DES		DES	
DW-3	2" well	30	25-30	115.30	DES		DES		DES	
DW-4	2" well	32	27-32	115.87	DES		DES		DES	
DW-5	2" well	32	27-32	115.57	10.22	105.35	11.29	104.28	12.31	103.26
DW-6	2" well	32	27-32	118.74	15.76	102.98	17.14	101.60	18.07	100.67
DW-7	2" well	32	27-32	118.38	15.37	103.01	16.64	101.74	17.59	100.79
DW-8	2" well	32	27-32	119.60	16.96	102.64	18.26	101.34	19.19	100.41
DW-9	2" well	32	27-32	118.42	NI		15.93	102.49	16.88	101.54
CW-1	4" well	12	NA	115.33	DES		DES		DES	
CW-2	4" well	14	NA	115.43	NM		NM		NM	
CW-3	4" well	13	NA	115.31	DES		DES		DES	
CW-4	4" well	14	NA	115.39	DES		DES		DES	

TABLE 3-2

GROUNDWATER ELEVATIONS SUMMARY
BUILDING 2273

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

All measurements are in units of feet.
AMSL - Above mean sea level
BGS - Below ground surface
BTOC - Below top of casing
NM - Not measured
NI - Not installed
DES - Destroyed
NA - Not available
[a] HLA assigned an elevation of 100 feet AMSL to the TOC at MW-1 and measured the elevations of MW-2 through MW-7, DW-1 through DW-5, and CW-1 through CW-4 relative to that elevation. TtNUS resurveyed five of these wells relative to DW-8 and adjusted all of the arbitrary TOC elevations accordingly.

Rev. 1
03/30/01

LEGEND

MONITORING WELL

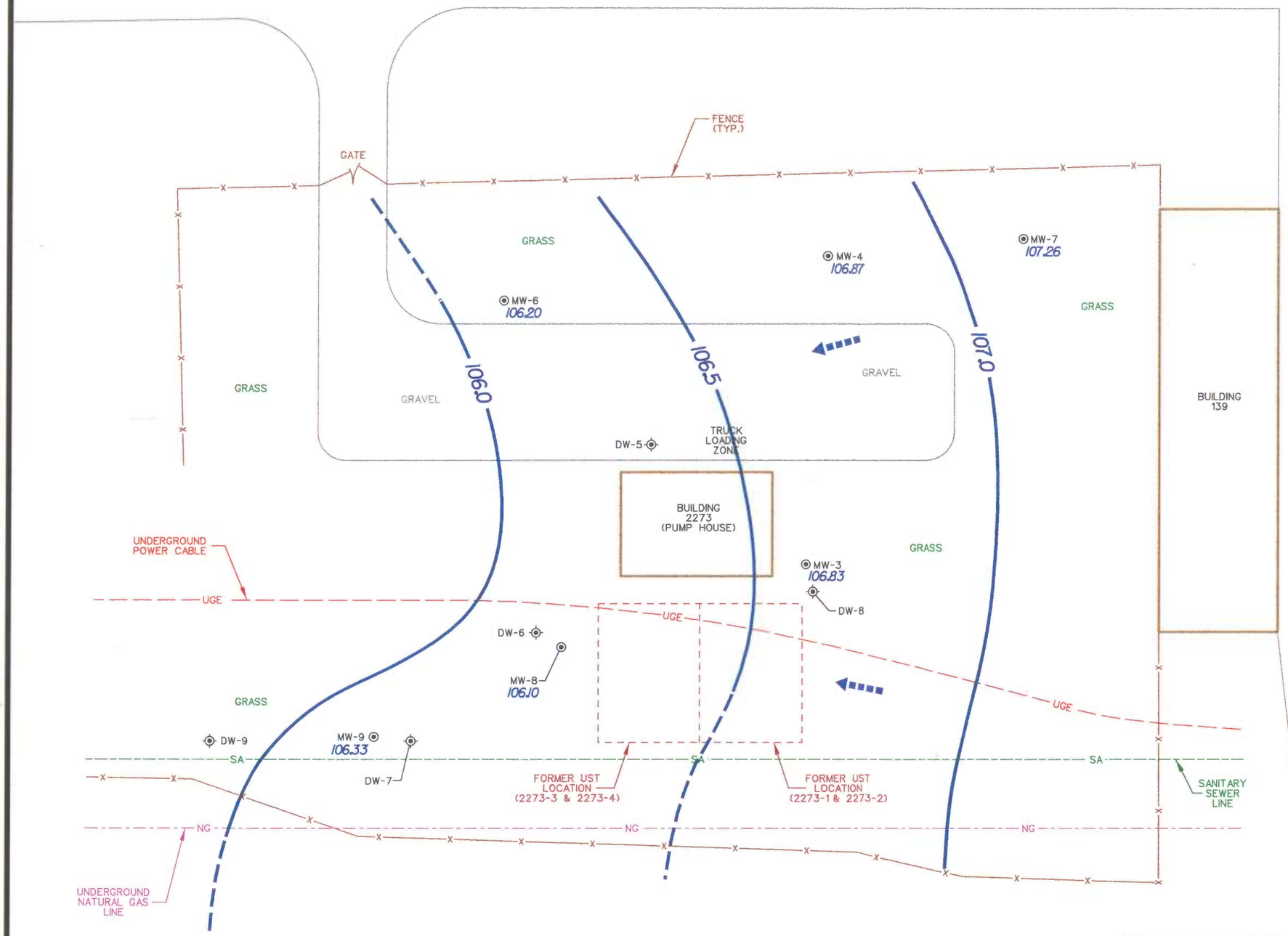
DEEP MONITORING WELL

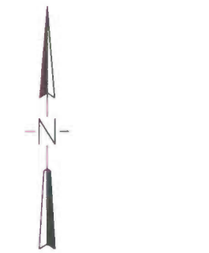
GROUNDWATER ELEVATION [1] 106.83

POTENTIOMETRIC SURFACE ISOCON [1] (DASHED WHERE APPROX.)

GROUNDWATER FLOW DIRECTION (APPROX.)

1 - ELEVATION IN FEET ABOVE MEAN SEA LEVEL





20 0 20
SCALE IN FEET

FIGURE 3-1

GROUNDWATER ELEVATIONS IN SHALLOW WELLS ON SEPTEMBER 18, 2000
BUILDING 2273 - MAIN BASE
SITE ASSESSMENT REPORT

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

n11x17b.dgn

Rev. 1
03/30/01

LEGEND

MONITORING WELL

DEEP MONITORING WELL

GROUNDWATER ELEVATION[1] 101.34

POTENTIOMETRIC SURFACE ISOCON[1] (DASHED WHERE APPROX.)

GROUNDWATER FLOW DIRECTION (APPROX.)

1 - ELEVATION IN FEET ABOVE MEAN SEA LEVEL

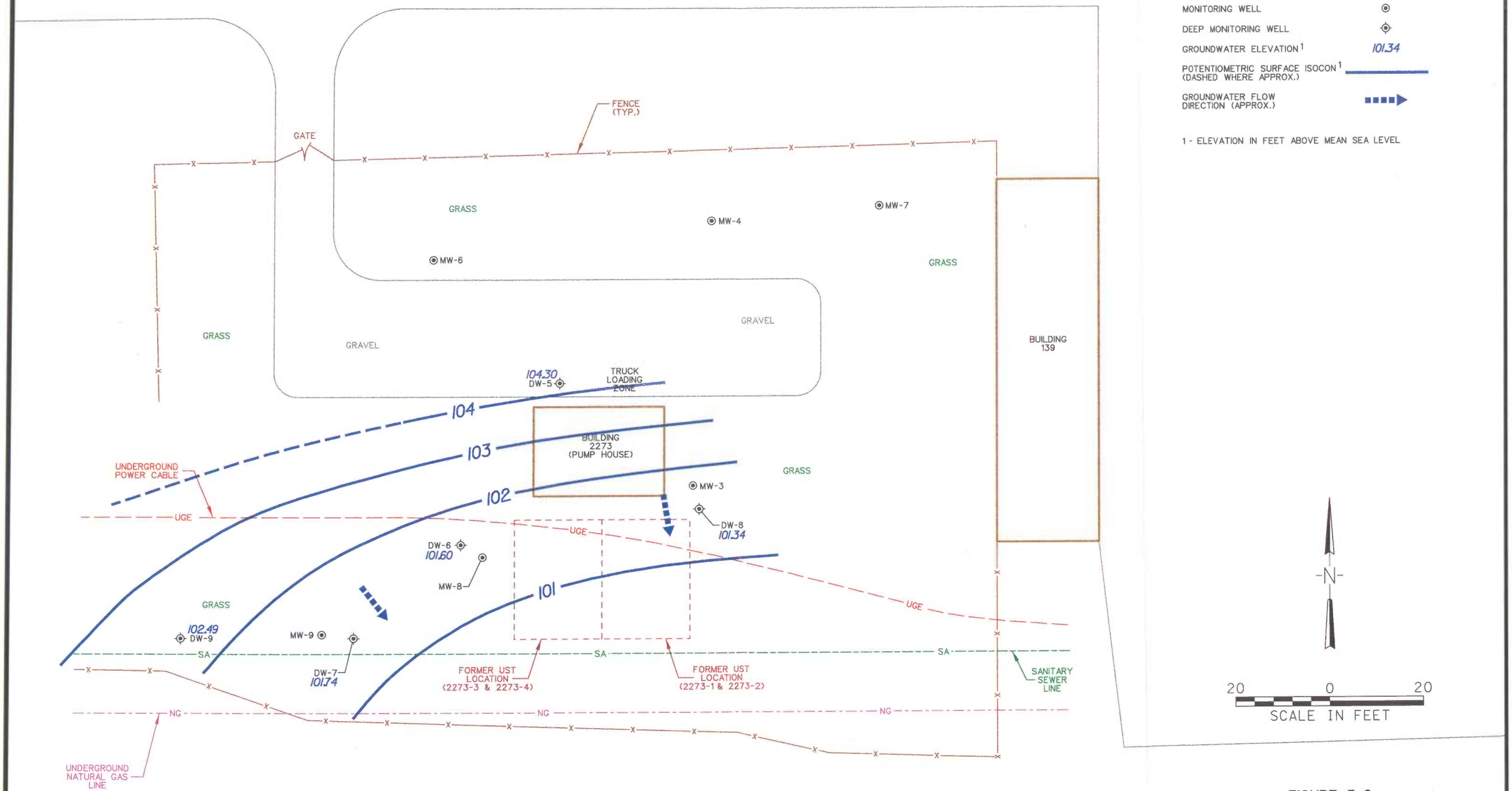


FIGURE 3-2

GROUNDWATER ELEVATIONS IN DEEP WELLS ON SEPTEMBER 18, 2000
BUILDING 2273 - MAIN BASE
SITE ASSESSMENT REPORT

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

n11x17b.dgn

sandy and more permeable aquifer zone lies below the deep aquifer wells at Building 2273. Using this hydrogeologic model, it is likely that the zone monitored by the deep wells represents a low conductivity zone in which the predominant groundwater flow direction is vertical, from the shallow to deeper aquifer zones. This is supported by calculations of the vertical and horizontal gradients at the site as shown in the table below. The gradient data show that the vertical gradient (0.22) in the deep aquifer zone is greater than the horizontal gradient (0.08). Therefore, the horizontal flow direction indicated by the potentiometric contours in Figure 3-2 for the deep aquifer zone represent the horizontal component of flow for that aquifer interval, but not the predominant flow direction, which is downward.

VERTICAL GRADIENT CALCULATIONS

Shallow Well / Deep Well	Shallow Well Groundwater Elevations (feet)	Deep Well Groundwater Elevations (feet)	Vertical Distance[a] (feet)	Vertical Gradient
--[b] / DW-5	105.15	103.26	19.5	-0.10
MW-8 / DW-6	104.87	100.67	19.5	-0.22
MW-9 / DW-7	105.14	100.79	19.5	-0.22

HORIZONTAL GRADIENT CALCULATIONS

Aquifer Zone	Upgradient Well Groundwater Elevations (feet)	Downgradient Well Groundwater Elevations (feet)	Horizontal Distance (feet)	Horizontal Gradient
Shallow (MW-7 to MW-6)	106.12	104.94	96	0.01
Deep (DW-5 to 100 ft contour)[c]	103.26	100	40	0.08

[a] Distance is difference between mid-point of well screens.
[b] Shallow aquifer zone interpolated from potentiometric map contours.
[c] Distance from well DW-5 to 100-foot potentiometric contour line on map.

3.2 SOIL QUALITY

ABB-ES subjected approximately 78 soil samples collected from areas surrounding the tanks, product lines, and vent lines to organic vapor analyses. No significant petroleum contamination was observed outside a small soil volume near product and vent lines. Approximately 2 cubic yards of stained soil was removed from the area. ABB-ES also documented the pre- and post-burn testing of soils removed from the tank pit (ABB-ES, 1997b). The investigations have shown no evidence of other soil contamination at the site.

3.3 GROUNDWATER QUALITY

Chapter 62-770.680 F.A.C. requires that investigators use the lower of the groundwater and surface water GCTLs if contaminated groundwater at a site is likely to adversely impact nearby surface water. The low concentrations observed near Building 2273 are unlikely to affect surface water, so the groundwater GCTLs published May 26, 1999 (FDEP, 1999a), are applicable in the discussions below.

3.3.1 Investigations Prior to 1998

In early 1997, attention was focused on the results from wells DW-1 and DW-2. These wells, which were installed in a small area just west of the former tank pit, contained elevated concentrations of ethylbenzene, total VOCs, and total xylenes above screening criteria. Concentrations in well DW-1 declined significantly between October 1996 and June 1997, while concentrations in DW-2 changed little. Benzene concentrations in wells MW-4 and DW-2 exceeded the GCTL in late 1996. The only benzene exceedance observed in the June 1997 sampling event was in well DW-2 (a concentration of 3.3 µg/L versus a GCTL of 1 µg/L); however, MW-4 was not sampled at this time. The June 1997 sampling also revealed a 2-methylnaphthalene exceedance in well DW-5 (a concentration of 22 µg/L versus a GCTL of 20 µg/L). Lead was observed in well DW-3 at a concentration of 15 µg/L (equal to the GCTL and slightly higher than the background concentration of 14.5 µg/L) and in well CW-1 at a concentration of 19.5 µg/L during sampling in August 1995. Figures 3-3 and 3-4 show all GCTL exceedances observed during the investigations.

The results of the site screening investigation at SA 30 (HLA, 1998a), located immediately east of Building 2273, indicate that this site is not a source area for the contaminants found in the groundwater at Building 2273. SA 30 includes Building 139, the former pesticide mixing facility. Monitoring well OLD-30-4 is located near Building 139 and analytical data show that no pesticides were detected above screening criteria. Groundwater at SA 30 generally flows to the northwest and parts of the site are upgradient of Building 2273. Analytical data show that no VOCs or PAHs found at Building 2273 were detected in any of the monitoring wells at SA 30.

An environmental investigation was performed at Study Area 39, located just to the west of Building 2273. The Site Investigation Report for Study Area 39 (TtNUS, 2000) indicates that groundwater generally flows to the southeast and parts of this site could be considered upgradient of Building 2273. Analytical data show that, except for chloroform, no VOCs or PAHs found at Building 2273 were detected above screening criteria in any of the monitoring wells at SA 39. Tetrachloroethene, which is primary groundwater contaminant at SA 39, was not detected in any groundwater samples at Building 2273. Therefore this site is not a source area for the contaminants found in the groundwater at Building 2273.

3.3.2 Investigations After 1998

September/October 1999

Concentrations of methylnaphthalene isomers in DW-5 slightly exceeded GCTLs and benzene exceedances were noted in wells DW-7 and DW-9 (5.8 µg/L and 1.2 µg/L), respectively, versus a GCTL of 1 µg/L. Benzene was also found at an estimated concentration (1J µg/L) equal to the GCTL in MW-4. Wells DW-7 and DW-9 are near the southwest corner of the site. The concentration of total xylenes (100 µg/L) exceeded the GCTL of 20 µg/L in well DW-6.

April 2000

DW-9 was the only well sampled during this event, and benzene was detected at a concentration of 1.2 µg/L, exceeding the GCTL of 1 µg/L.

June 2000

Benzene was again detected in well DW-9 (the only well sampled), but at a concentration of 0.45J µg/L, less than the GCTL of 1 µg/L.

November 2000

Concentrations of methylnaphthalene isomers observed in well DW-5 again exceeded GCTLs. The concentration of benzene in well DW-7 (3.2 µg/L) exceeded the GCTL of 1 µg/L, but was lower than that observed in October 1999 (5.8 µg/L).

3.3.3 Groundwater Quality Summary

Groundwater sampling revealed elevated concentrations of contaminants, especially benzene, downgradient of the former tank pit. The only observed upgradient GCTL exceedances are the October 1999 and November 2000 detections of methylnaphthalene isomers in well DW-5. Sampling conducted in late 1999 and 2000 suggests that remaining significant groundwater contamination exists only in the southwest corner of the site, where benzene concentrations in wells DW-7 (October 1999 and November 2000) and DW-9 (April 2000, but not June or November 2000) exceeded the GCTL. As ABB-ES suggested, the former tank pit probably is the source of contamination, but no contaminant has been observed in a pattern suggesting a plume.

All observed detections and GCTL exceedances are presented in Table 3-3. Appendix H contains all analytical data obtained by ABB-ES and TtNUS.

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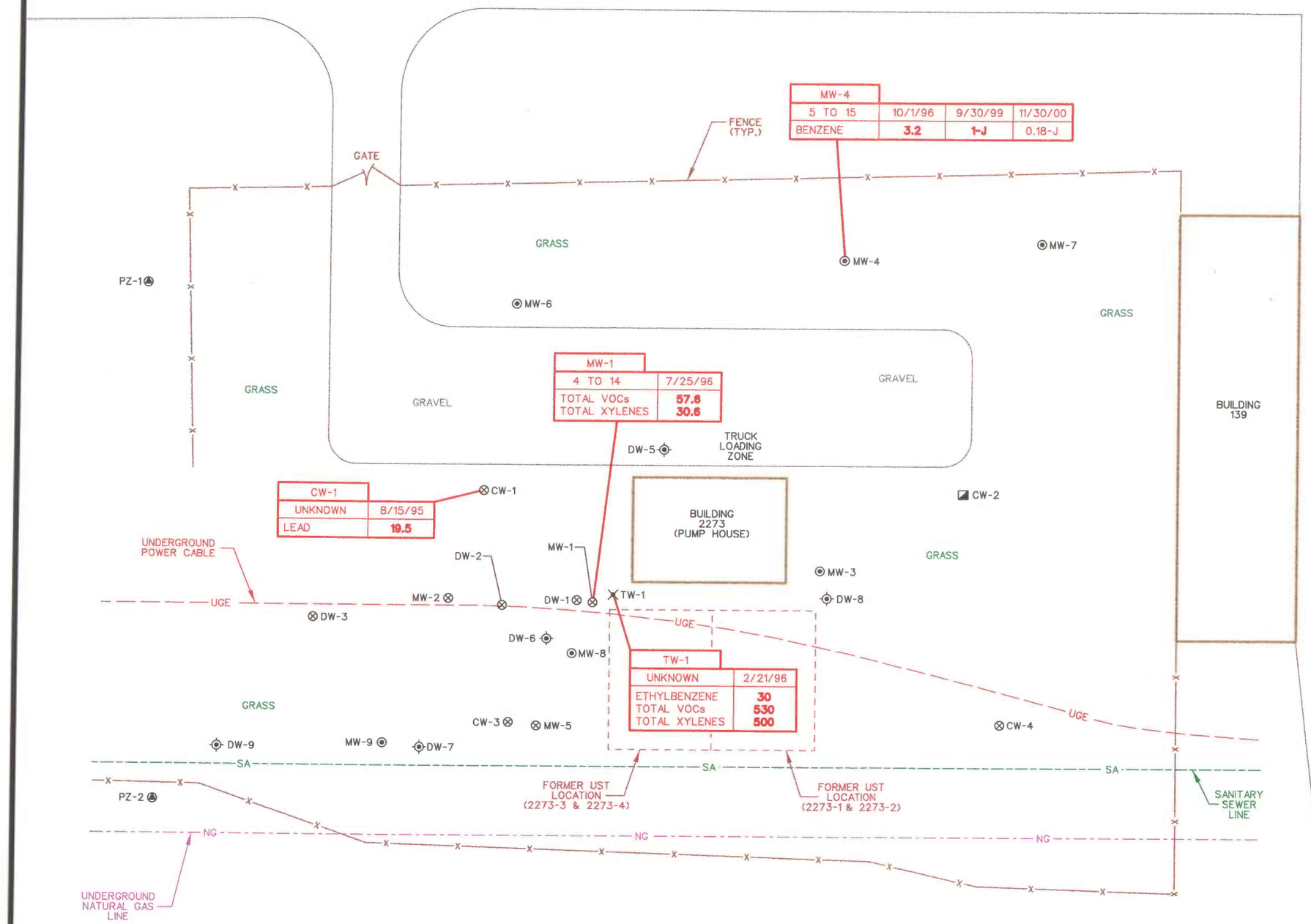

LEGEND

- MONITORING WELL
- DEEP MONITORING WELL
- PIEZOMETER
- DESTROYED WELL
- TEMPORARY WELL
- COMPLIANCE WELL

WELL I.D.	SAMPLE COLLECTION DATE
MW-4	
SCREENED INTERVAL TO NEAREST FOOT: 5 TO 15	9/30/99
ANALYTE: BENZENE	ANALYTE CONCENTRATION 1,2: 1-J

ESTIMATED VALUE J

1-CONCENTRATION IN MICROGRAMS PER LITER (ug/L)
2-BOLD CONCENTRATION INDICATES EXCEEDANCE

SCREENING CRITERIA

ANALYTE	GCTL[1]	BGSV[1]
BENZENE	1	-
1,4-DICHLOROBENZENE	75	-
ETHYLBENZENE	30	-
LEAD	15	4
1-METHYLNAPHTHALENE	20	-
2-METHYLNAPHTHALENE	20	-
NAPHTHALENE	20	-
TOTAL VOCs	50	-
TOTAL XYLENES	20	-

GCTL=GROUNDWATER CLEANUP TARGET LEVEL
BGSV=BACKGROUND SCREENING VALUE

-N-

20 0 20
SCALE IN FEET

NOTE:
DATA ARE SHOWN FOR LOCATIONS WITH PAST OR CURRENT SCREENING CRITERIA EXCEEDANCES.

FIGURE 3-3

GROUNDWATER EXCEEDANCES IN SHALLOW WELLS
BUILDING 2273 - MAIN BASE
SITE ASSESSMENT REPORT

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

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Rev. 1
03/30/01

LEGEND

MONITORING WELL
DEEP MONITORING WELL
PIEZOMETER
DESTROYED WELL
TEMPORARY WELL
COMPLIANCE WELL

WELL I.D. — DW-7
SCREENED INTERVAL TO NEAREST FOOT — 40 TO 45
SAMPLE COLLECTION DATE — 10/2/99
ANALYTE — BENZENE
ANALYTE CONCENTRATION [1,2] — 5.8

ESTIMATED VALUE J

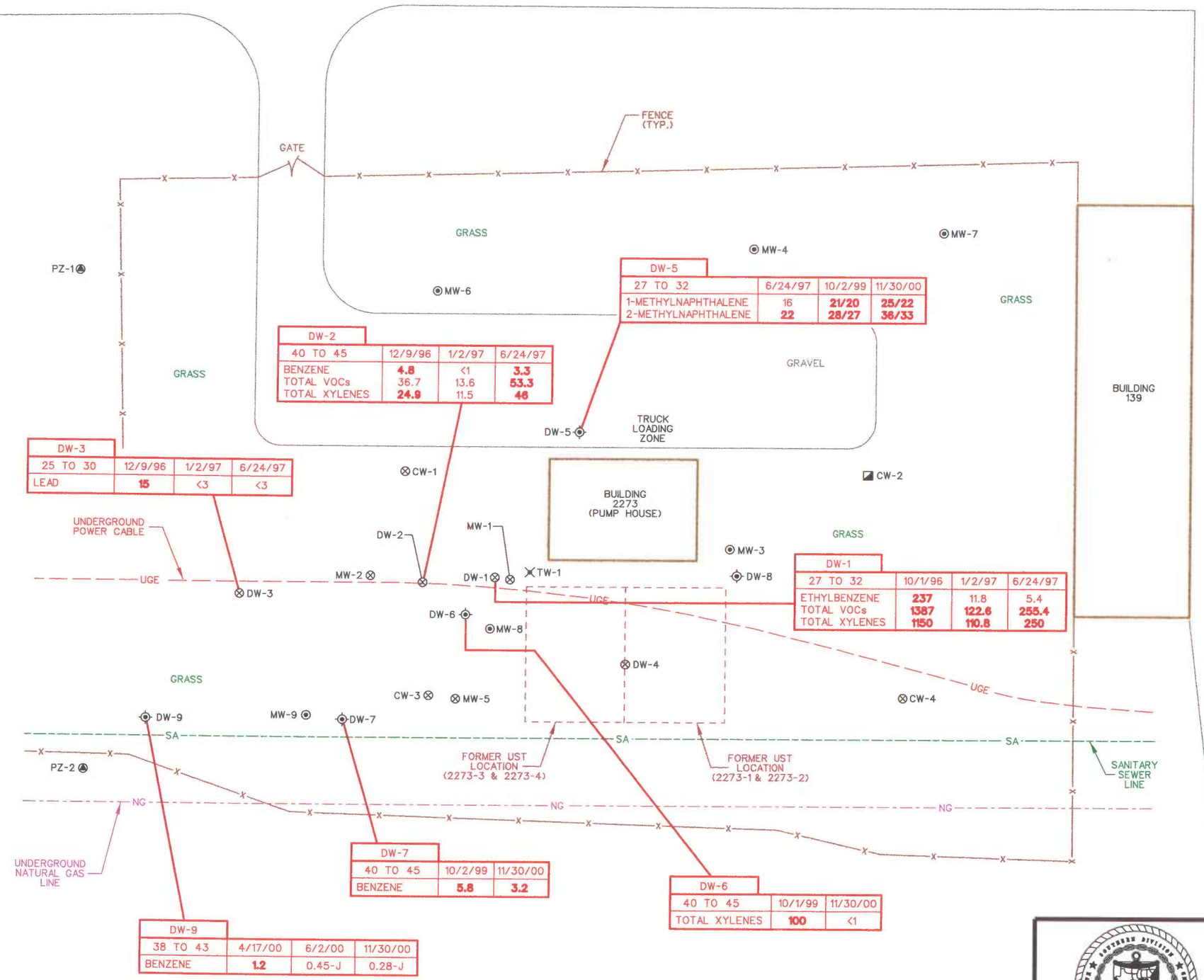
1-CONCENTRATION IN MICROGRAMS PER LITER (ug/L)
2-BOLD CONCENTRATION INDICATES EXCEEDANCE

SCREENING CRITERIA

ANALYTE	GCTL[1]	BGSV[1]
BENZENE	1	-
ETHYLBENZENE	30	-
LEAD	15	4
1-METHYLNAPHTHALENE	20	-
2-METHYLNAPHTHALENE	20	-
NAPHTHALENE	20	-
TOTAL XYLENES	20	-

GCTL=GROUNDWATER CLEANUP TARGET LEVEL
BGSV=BACKGROUND SCREENING VALUE

NOTE:
DATA ARE SHOWN FOR LOCATIONS WITH PAST OR CURRENT SCREENING CRITERIA EXCEEDANCES.



DW-5			
27 TO 32	6/24/97	10/2/99	11/30/00
1-METHYLNAPHTHALENE	16	**21/20**	**25/22**
2-METHYLNAPHTHALENE	**22**	**28/27**	**36/33**

DW-2			
40 TO 45	12/9/96	1/2/97	6/24/97
BENZENE	**4.8**	<1	**3.3**
TOTAL VOCs	36.7	13.6	**53.3**
TOTAL XYLENES	**24.9**	11.5	**46**

DW-3			
25 TO 30	12/9/96	1/2/97	6/24/97
LEAD	**15**	<3	<3

DW-1			
27 TO 32	10/1/96	1/2/97	6/24/97
ETHYLBENZENE	**237**	11.8	5.4
TOTAL VOCs	**1387**	**122.6**	**255.4**
TOTAL XYLENES	**1150**	**110.8**	**250**

DW-7		
40 TO 45	10/2/99	11/30/00
BENZENE	**5.8**	**3.2**

DW-6		
40 TO 45	10/1/99	11/30/00
TOTAL XYLENES	**100**	<1

DW-9			
38 TO 43	4/17/00	6/2/00	11/30/00
BENZENE	**1.2**	0.45-J	0.28-J

20 0 20
SCALE IN FEET

FIGURE 3-4

GROUNDWATER EXCEEDANCES IN DEEP WELLS BUILDING 2273 - MAIN BASE SITE ASSESSMENT REPORT

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

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TABLE 3-3

GROUNDWATER ANALYTICAL RESULTS
AUGUST 1995 THROUGH NOVEMBER 2000

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

WELL DESIGNATION / SAMPLE DATE	CAS Number	Screening Criteria [a]		TW-1	MW-1	MW-2	MW-3	MW-4			MW-5	MW-6
		Florida GCTL[b]	NTC BGSV [c]	2/21/96	7/25/96	7/25/96	7/25/96	10/1/96	9/30/99	11/30/00	10/1/96	12/9/96
Volatiles (µg/L)												
Acetone	67-64-1	700										
Benzene	71-43-2	1						3.2	1J	0.18J		
2-Butanone	78-93-3	4,200							48J	0.4J		
Carbon disulfide	75-15-0	700										
Chlorobenzene	108-90-7	100						22.9	16	3.9		3.7
Chloroform	67-66-3	5.7		NA								
1,2-Dichlorobenzene	95-50-1	600							NA	NA		
1,4-Dichlorobenzene	106-46-7	75							NA	NA		
cis-1,2-Dichloroethene	156-59-2	70										
Ethylbenzene	100-41-4	30		30	27							
Methyl *tert*-butyl ether	1634-04-4	50							NA	NA		
Toluene	108-88-3	40								0.14J		
Total VOCs		50[d]		530	57.6			3.2	1	0.32		
Total Xylenes	1330-20-7	20		500	30.6							
1,1,1-Trichloroethane	71-55-6	200										
Trichloroethene	79-01-6	3		NA								
PAHs (µg/L)									NA	NA		
Acenaphthene	83-32-9	20										
1-Methylnaphthalene	90-12-0	20										
2-Methylnaphthalene	91-57-6	20										
Naphthalene	91-20-3	20										
TRPH (mg/L)				NA					NA	NA		
TRPH		5,000			5.05	0.19	0.14	3.7				1.5
Inorganics (µg/L)				NA					NA	NA		
Lead	7439-92-1	15	14.5		4.8	3.5	6.3					8

TABLE 3-3

GROUNDWATER ANALYTICAL RESULTS
AUGUST 1995 THROUGH NOVEMBER 2000

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

WELL DESIGNATION	CAS Number	Screening Criteria [a]		MW-7	MW-8		MW-9		DW-1			DW-2		
SAMPLE DATE		Florida GCTL[b]	NTC BGSV [c]	12/9/96	10/1/99	11/30/00	10/2/99	11/30/00	10/1/96	1/2/97	6/24/97	12/9/96	1/2/97	6/24/97
Volatiles (µg/L)														
Acetone	67-64-1	700												
Benzene	71-43-2	1										4.8		3.3
2-Butanone	78-93-3	4,200												
Carbon disulfide	75-15-0	700												
Chlorobenzene	108-90-7	100										39	12.7	29.9
Chloroform	67-66-3	5.7					0.89J							
1,2-Dichlorobenzene	95-50-1	600			NA	NA	NA	NA						
1,4-Dichlorobenzene	106-46-7	75			NA	NA	NA	NA						
cis-1,2-Dichloroethene	156-59-2	70												
Ethylbenzene	100-41-4	30							237	11.8	5.4	7	2.1	4
Methyl *tert*-butyl ether	1634-04-4	50					NA	NA						
Toluene	108-88-3	40												
Total VOCs		50[d]							1,387	122.6	255.4	36.7	13.6	53.3
Total Xylenes	1330-20-7	20							1,150	110.8	250	24.9	11.5	46
1,1,1-Trichloroethane	71-55-6	200				0.42J								
Trichloroethene	79-01-6	3				2.6								
PAHs (µg/L)					NA	NA	NA	NA		NA			NA	
Acenaphthene	83-32-9	20												
1-Methylnaphthalene	90-12-0	20		6										
2-Methylnaphthalene	91-57-6	20		8										
Naphthalene	91-20-3	20												
TRPH (mg/L)						NA	NA	NA		NA			NA	
TRPH		5,000		3.6		0.66J								
Inorganics (µg/L)					NA	NA	NA	NA						
Lead	7439-92-1	15	14.5	5								11		

TABLE 3-3

GROUNDWATER ANALYTICAL RESULTS
AUGUST 1995 THROUGH NOVEMBER 2000

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

WELL DESIGNATION	CAS Number	Screening Criteria [a]		DW-3			DW-4	DW-5					DW-6	
SAMPLE DATE		Florida GCTL[b]	NTC BGSV [c]	12/9/96	1/2/97	6/24/97	6/24/97	6/24/97	10/2/99	10/2/99 Duplicate	11/30/00	11/30/00 Duplicate	10/1/99	11/30/00
Volatiles (µg/L)														
Acetone	67-64-1	700											83J	
Benzene	71-43-2	1												0.12J
2-Butanone	78-93-3	4,200												
Carbon disulfide	75-15-0	700												
Chlorobenzene	108-90-7	100		2										0.35J
Chloroform	67-66-3	5.7		5.4									0.71J	
1,2-Dichlorobenzene	95-50-1	600		110		42.8			NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	106-46-7	75		4.9					NA	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	156-59-2	70												
Ethylbenzene	100-41-4	30					3.7							0.3J
Methyl *tert*-butyl ether	1634-04-4	50							NA	NA	NA	NA	NA	NA
Toluene	108-88-3	40												
Total VOCs		50[d]					15.7						100	0.42
Total Xylenes	1330-20-7	20					12						100	
1,1,1-Trichloroethane	71-55-6	200												
Trichloroethene	79-01-6	3												
PAHs (µg/L)					NA								NA	NA
Acenaphthene	83-32-9	20									0.55J			
1-Methylnaphthalene	90-12-0	20						16	21	20	25	22		
2-Methylnaphthalene	91-57-6	20						22	28	27	36	33		
Naphthalene	91-20-3	20						8	15	14	12	11		
TRPH (mg/L)					NA				NA	NA	NA	NA	NA	NA
TRPH		5,000												
Inorganics (µg/L)									NA	NA	NA	NA	NA	NA
Lead	7439-92-1	15	14.5	15										

TABLE 3-3

GROUNDWATER ANALYTICAL RESULTS
AUGUST 1995 THROUGH NOVEMBER 2000

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

WELL DESIGNATION / SAMPLE DATE	CAS Number	Screening Criteria [a]		DW-7		DW-8		DW-9		
		Florida GCTL[b]	NTC BGSV [c]	10/2/99	11/30/00	10/1/99	11/30/00	4/17/00	6/2/00	11/30/00
Volatiles (µg/L)										
Acetone	67-64-1	700		23J				13J		
Benzene	71-43-2	1		5.8	3.2	0.71		1.2	0.45J	0.28J
2-Butanone	78-93-3	4,200						2.3J		
Carbon disulfide	75-15-0	700						0.75J	0.32J	
Chlorobenzene	108-90-7	100		1.3	0.75J	11		9.8	8.2	5
Chloroform	67-66-3	5.7		0.23		0.14J		1.1		
1,2-Dichlorobenzene	95-50-1	600		NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	106-46-7	75		NA	NA	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	156-59-2	70		0.12J	0.11J					
Ethylbenzene	100-41-4	30		0.36J	0.25J	1.2		1.4	1.6J	1.8
Methyl *tert*-butyl ether	1634-04-4	50		NA	NA	NA	NA	NA	NA	NA
Toluene	108-88-3	40			0.16J	0.15J				
Total VOCs		50[d]		7.1	3.61	11.26		6.6	6.15	3.58
Total Xylenes	1330-20-7	20		0.94		9.2		4	4.1	1.5
1,1,1-Trichloroethane	71-55-6	200								
Trichloroethene	79-01-6	3								
PAHs (µg/L)				NA	NA			NA	NA	NA
Acenaphthene	83-32-9	20								
1-Methylnaphthalene	90-12-0	20								
2-Methylnaphthalene	91-57-6	20								
Naphthalene	91-20-3	20				0.4J				
TRPH (mg/L)				NA	NA	NA	NA	NA	NA	NA
TRPH		5,000								
Inorganics (µg/L)				NA	NA	NA	NA	NA	NA	NA
Lead	7439-92-1	15	14.5							

TABLE 3-3

GROUNDWATER ANALYTICAL RESULTS
AUGUST 1995 THROUGH NOVEMBER 2000

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

WELL DESIGNATION / SAMPLE DATE	CAS Number	Screening Criteria [a]		CW-1	CW-2	CW-3	CW-4
		Florida GCTL[b]	NTC BGSV [c]	8/15/95	8/15/95	8/15/95	8/15/95
Volatiles (µg/L)							
Acetone	67-64-1	700					
Benzene	71-43-2	1					
2-Butanone	78-93-3	4,200					
Carbon disulfide	75-15-0	700					
Chlorobenzene	108-90-7	100					
Chloroform	67-66-3	5.7					
1,2-Dichlorobenzene	95-50-1	600					
1,4-Dichlorobenzene	106-46-7	75					
cis-1,2-Dichloroethene	156-59-2	70					
Ethylbenzene	100-41-4	30					
Methyl *tert*-butyl ether	1634-04-4	50					
Toluene	108-88-3	40					
Total VOCs		50[d]					
Total Xylenes	1330-20-7	20					
1,1,1-Trichloroethane	71-55-6	200					
Trichloroethene	79-01-6	3					
PAHs (µg/L)							
Acenaphthene	83-32-9	20					
1-Methylnaphthalene	90-12-0	20					
2-Methylnaphthalene	91-57-6	20					
Naphthalene	91-20-3	20					
TRPH (mg/L)							
TRPH		5,000					
Inorganics (µg/L)							
Lead	7439-92-1	15	14.5	19.5	2.7		4.1

J - Estimated value
NA - Not analyzed

Only chemicals detected in at least one sample are shown.

(a) For an organic analyte, the screening criterion is the GCTL; for an inorganic analyte with an established GCTL and BGSV, the screening criterion is the greater of the GCTL or the BGSV.

(b) Groundwater Cleanup Target Level (Development of Soil Cleanup Target Levels (SCTLs) for Chapter 62-777, F.A.C., FDEP, May 26, 1999).

(c) Background Screening Value (Background Sampling Report for NTC, Orlando, Florida; ABB Environmental Services, August 1995) for inorganics only.

(d) Screening value does not apply to samples collected after May 26, 1999.

4.0 DISCUSSION

No "excessively contaminated" soil, as defined in Chapter 62-770.200 F.A.C. has been observed since the removal and incineration of a small quantity of stained soil found near product and vent lines during the removal of USTs 2273-3 and 2273-4 in 1995. Soil contamination is not considered to be a significant problem at the site.

No sinkholes have been observed on the site or on the NTC Main Base. Site soils are considered suitable for urban development.

Early groundwater sampling suggested the presence of contamination at several locations on-site, with the greatest GCTL exceedances occurring in deep wells. Sampling conducted in late 1999 and 2000 confirms that groundwater beneath the partially cemented layer of sand (below 27 to 30 feet bgs) contains the highest concentrations of contaminants.

Observed concentrations of organics in wells immediately downgradient of the former tank pit have decreased significantly since the first monitoring wells were installed in 1996. The presence of benzene at concentrations exceeding its GCTL of 1 µg/L in well DW-7 is the most significant exceedance observed in the last two sampling rounds. The well lies in the southwest corner of the site (downgradient). No clearly defined contaminant plume exists.

Depth to groundwater in the shallow wells is typically 8 to 10 feet bgs and 2 to 5 feet lower in the deep wells. The lower levels in the deep wells suggest a downward groundwater flow component. Such a flow could also result from surface recharge maintaining higher levels in the shallow wells while the lower part of the aquifer is discharging at some distant point. Insufficient data are available to determine if the utility trenches installed in 1998 significantly influenced the direction of groundwater flow above the partially cemented sand layer.

Public well WW-5 lies approximately 2,250 feet to the north and WW-6 lies approximately 500 feet to the northwest. Private potable water wells lie at 4332 Roush Avenue and 4333 Rixey Street, approximately 0.18 and 0.23 miles southeast of the site, respectively. An irrigation well lies at 4349 Daubert Street, between the two potable water wells described above. Lake Gear, approximately 200 feet southwest of the site, is the nearest surface water body.

5.0 CONCLUSIONS AND RECOMMENDATIONS

Little information is available about the removal of USTs 2273-1 an 2273-2, but the investigations described above found little or no evidence of contamination from those tanks. The Tank Closure Report included in the Contamination Assessment Report states that USTs 2273-3 and 2273-4 were in good condition when removed and have been properly destroyed (ABB-ES, 1997a). A small quantity of contaminated soil found during the removal of USTs 2273-3 and 2273-4 was removed from the site and properly incinerated. The investigations have revealed no evidence of significant soil contamination at the site.

Site soils are composed of sands to a depth of about 30 feet bgs and clayey sands below about 30 feet bgs. The sands between 20 and 27 feet bgs appear to be partially cemented.

Groundwater flows from east-northeast to west-southwest above the partially cemented layer, while groundwater below the layer appears to flow to the southeast. Conditions near the site appear to create a significant downward groundwater flow component.

Scattered detections of organic groundwater contaminants appeared in investigation reports beginning in 1996. Those detections appeared in data for both the shallow and deep wells. Recent sampling has shown little contamination in shallow wells and evidence that deep well contamination is concentrated in the southwest (downgradient) corner of the site. Benzene is the primary contaminant of concern.

No free product has been observed since the sampling of temporary well TW-1 in February 1996.

Recently observed concentrations of benzene in groundwater at well DW-7 preclude consideration of the site for No Further Action under Chapter 62-770 F.A.C. Natural attenuation may be responsible for the significant declines in concentrations of other contaminants observed in early sampling, and benzene is amenable to natural attenuation. The concentrations of benzene observed since the installation of wells DW-7 and DW-9 are only slightly above the GCTL of 1 µg/L. The most recent concentration observed at well DW-9 is below the GCTL. TtNUS suggests that continued monitoring for a limited period is appropriate.

TtNUS recommends the installation of three additional deep wells. One well would lie crossgradient near the northeast corner of the former building 2273 foundation. A second well would lie at an upgradient location (near MW-6). The last well would lie downgradient of wells DW-7 and DW-9. The presence of buried utilities would require that this well be placed outside the southern NTC boundary.

TtNUS recommends continued quarterly groundwater monitoring at the following locations for a period of one year:

- Downgradient at wells DW-9 and DW-7. These wells lies near the site boundary. A significant increase in benzene concentrations in DW-9 should be grounds for re-examining the monitoring policy.
- Upgradient at wells DW-5 and DW-8. In addition to lying upgradient, well DW-5 was found to contain methylnaphthalene isomers at concentrations at or slightly above the GCTLs in October 1999. Methylnaphthalene concentrations should decline and no benzene exceedances should appear during the monitoring period.
- In the source area at well DW-6.
- Wells should be sampled using the procedures used in the past and analyzed for VOCs using USEPA Method 8260B.

No remaining deep wells lie strongly crossgradient from the assumed source (the tank pit) and the direction of groundwater flow. Evidence of a partially cemented layer of soil between the shallow and deep zones suggests that sampling crossgradient shallow wells would not produce data indicative of deeper conditions.

The site should be reevaluated at the conclusion of the year of monitoring. A change of status to No Further Action will be appropriate if no GCTL exceedances occur in the final two monitoring events and concentrations in the source area meet milestone objectives established in an approved monitoring plan.

Monitoring wells MW-3 and CW-2, which were found during a recent sampling event, should be properly abandoned.

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APPENDIX A

SITE ASSESSMENT REPORT SUMMARY SHEET

Site Assessment Summary and Worksheet

This form should be completed by FDEP Site Managers for all sites.
(Petroleum Cleanup Guidance Document #2).

Site Name _____ Prepared By _____
FACID# _____ Site Manager _____
Location _____ FDEP Geologist Reviewer _____
Contractor _____ Date Assessment Approved ___ / ___ / ___

☐ Cluster Site? Other Facility ID#'s: (1) _____ (2) _____ (3) _____

REPORT SUMMARY:

Date of Report	Type of Report	Date of Review	Reviewer(s)	Comments
___ / ___ / ___		___ / ___ / ___		
___ / ___ / ___		___ / ___ / ___		
___ / ___ / ___		___ / ___ / ___		
___ / ___ / ___		___ / ___ / ___		
___ / ___ / ___		___ / ___ / ___		
___ / ___ / ___		___ / ___ / ___		

Date Last Updated ___ / ___ / ___

DISCOVERY AND SOURCE INFORMATION:

Discovery Date(s): 1st ___ / ___ / ___ 2nd ___ / ___ / ___ 3rd ___ / ___ / ___

Program Type(s): ☐ ATRP ☐ EDI ☐ PLRIP ☐ PCPP ☐ Non-program

Score ___ Reason for Assessment: _____

Active Site? Yes ☐ No ☐ If yes, date of last tightness test: ___ / ___ / ___

If applicable, date when tanks were abandoned/removed: ___ / ___ / ___

Product Types (suspected sources of contamination):

☐ Leaded Gasoline ☐ Diesel/Kerosene ☐ Bunker C Fuel Oil
☐ Unleaded Gasoline ☐ Used Oil ☐ Other: _____

Comments: _____

WELL SURVEY (including irrigation, industrial and all potable wells):

Public Supply well(s) within 1/2 mile of site? Yes ☐ No ☐ Private well(s) within 1/4 mile of site? Yes ☐ No ☐
Are they downgradient? Yes ☐ No ☐ Are they downgradient Yes ☐ No ☐
Screened deeper than the contamination? Yes ☐ No ☐ Screened deeper than the contamination? Yes ☐ No ☐

Comments: _____

See potable well survey map

SOURCE REMOVAL (including soil removal during tank closures):

☐ Soil removal _____ cubic yds or _____ tons Date Performed: ___ / ___ / ___
Description: _____
Soil remediation option: ☐ Incineration ☐ Landfill ☐ Landfarm ☐ Other _____
☐ Free product removal _____ gals Date Performed: ___ / ___ / ___
Description: _____
☐ Contaminated water removal _____ gals Date Performed: ___ / ___ / ___
Description: _____

LITHOLOGIC SUMMARY:

Description: _____

The impacted aquifer can be best characterized by the following description:

☐ Predominantly Sands ☐ Intermingled Sands & Clays ☐ Predominantly Clays ☐ Limestone

See Cross-Sections (if available)

GROUNDWATER ELEVATION DATA:

Depth to groundwater in upper zone water-table wells (ft): _____ to _____ Average (ft) _____

Depth to groundwater in lower zone vertical extent wells (ft): _____ to _____ Average (ft) _____

Observed maximum range of upper zone fluctuation (ft): _____ Tidally Influenced? Yes ☐ No ☐

Suspected Perched Aquifer Conditions? Yes ☐ No ☐

Comments: _____

See graphical and tabular summaries Date Last Updated ____ / ____ / ____

SOIL INVESTIGATIONS:

Is there vadose zone soil contamination Yes ☐ No ☐

Soil Screening Results

☐ FID ☐ PID ☐ Other _____ Highest current OVA concentration (ppm) _____

Sample # _____ Depth (ft): _____ Date Sampled ____ / ____ / ____

Laboratory Analytical Results (current maximum)	Conc. (ppm)	SPLP/TCLP (mg/l) * if applicable *	Sample #	Depth (ft)	Date Sampled
Total Volatile Organic Aromatics					____ / ____ / ____
Polynuclear Aromatic Hydrocarbons					____ / ____ / ____
Total Recoverable Petroleum Hydrocarbons					____ / ____ / ____
Other [_____]					____ / ____ / ____
Other [_____]					____ / ____ / ____

Comments: _____

See graphical and tabular summaries Date Last Updated ____ / ____ / ____

GROUNDWATER INVESTIGATIONS:

Maximum Contaminant Levels (latest sampling data prior to RA implementation):

Above CTLs	Chemicals of Concern	Conc.(ppb)	Well #	Date Sampled	Applicable CTL
☐	Benzene			____ / ____ / ____	1
☐	Ethylbenzene			____ / ____ / ____	30
☐	Toluene			____ / ____ / ____	40
☐	Xylenes			____ / ____ / ____	20
	VOA's (BTEX)			____ / ____ / ____	n/a
☐	MTBE			____ / ____ / ____	35
☐	EDB			____ / ____ / ____	0.02
☐	TRPH (ppm)			____ / ____ / ____	5 mg/l
☐	Naphthalene			____ / ____ / ____	20
	PAH's			____ / ____ / ____	n/a
☐	Lead (total)			____ / ____ / ____	15
☐	Other [_____]			____ / ____ / ____	
☐	Other [_____]			____ / ____ / ____	

Free product present? Yes ☐ No ☐ Where? _____

Maximum product thickness (ft) _____ Product recovery ongoing? Yes ☐ No ☐

Estimated depth of contamination (ft) _____ Lower aquifer(s) contaminated? Yes ☐ No ☐

Comments: _____

See graphical and tabular summaries Date Last Updated ____ / ____ / ____

AQUIFER CHARACTERISTICS:

See RAP Design Summary and Worksheet

COMMENTS/RECOMMENDATIONS:

_____

_____

_____

_____

_____

Date Last Updated ____ / ____ ____

APPENDIX B

SOIL BORING LOGS

BORING LOG

PROJECT NAME: NTC Orlando
PROJECT NUMBER: ~~584/10.4757~~ 7457
DRILLING COMPANY: GPI
DRILLING RIG: Deidrich D-120
BORING NUMBER: DW-6
DATE: O.C. 9/8/99 - I.C. 9/22/99
GEOLOGIST: S. Barton / G. Braganza
DRILLER: Nick Smarrito

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows/ 6" or ROD (%)	Sample Recovery/ Sample Length	Time	Lithology Change (Depth/Ft.) or Screened Level	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
↑	0		6/6	0854	ft. gray & black sand		gray & blk	fine-grnd sand		dry, no odor				
HA			6/6											
			6/6											
↓	4		6/6	↓										
SS 1	4		6/6	0868		loose	lt. gray	fn-grnd sand, dry			∅			
1	6		6/	↓				w/ black stringers			↓			
SS 2	6		6/6	1000							∅			
2	8		4/	↓							↓			
SS 3	8		6/6	1014	white sand		wht	fine-to med.-grnd		dry, no	∅			
	10		/	↓				sand, trace phosphatic grns		odor	↓			
SS 4	10		6/5.5	1018		mod. dense	dk gray to blk	fine-grnd. sand		v. moist, degraded organic	∅			
	12		/	↓	dk gray & black sand						↓			
SS 5	12		6/6	1021						odor	∅			
	14		6/2	↓						saturated	↓			
SS 6	14		6/6	1030							∅			
	16		1/	↓							↓			
SS 7	16		6/6	1034	dk brown sand		dk brown	fine-to med-grnd		v. moist, degrd.	∅			
	18		0.5/	↓				sand		organic odor	↓			
SS 8	18		6/6	1039							∅			
	20		6/4	↓				trace silt			↓			
SS 9	20		6/6	1042						saturated	∅			
	22		3.25/	↓							↓			
SS 10	22		6/6	1046	sand w/clay		brown	med-to coarse-grnd		wet	∅			
	24		6/2	↓				sand w/sparse clay			↓			
SS ↓	24		6/3.75	1048			dk brown	zones		saturated	∅			

* When rock coring, enter rock brokeness.
** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated response is read.

emarks:

Drilling Area Background (ppm): ∅

Converted to Well? Yes ✓ No

Well I.D. #: DW-6

BORING LOG

PROJECT NAME: _____ BORING NUMBER: DW-6
PROJECT NUMBER: _____ DATE: _____
DRILLING COMPANY: _____ GEOLOGIST: _____
DRILLING RIG: _____ DRILLER: _____

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows/ 6" or ROD (%)	Sample Recovery/ Sample Length	Time	Lithology Change (Depth/Ft.) or Screened Level	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
SS	26	(50)		1048							↓			
SS	26	4.5	4.5	1052							0			
↓	28			↓							↓			
SS	28		6	1104	Tan sandy clay	hard	tan	sandy clay, friable		dry, no odor	0			
↓	30		0.5	↓				→ set outer casing ←			↓			
								⊣⊢						
								Boring Terminated @ 43.5' BGS						

* When rock coring, enter rock brokeness
** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated response is read.

Remarks: _____

Drilling Area Background (ppm): 0

Converted to Well? Yes ✓ No _____ Well I.D. #: DW-6

BORING LOG

PROJECT NAME: NTC Orlando - Bldg 2273
PROJECT NUMBER: 7457
DRILLING COMPANY: GPI
DRILLING RIG: Diedrich D-120
BORING NUMBER: (SB) DMW-7
DATE: O.C. 9-9-99 / 9-22-99 I.C.
GEOLOGIST: S. Barton / G. Braganza
DRILLER: Nick Smarito

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows/ 6" or ROD (%)	Sample Recovery/ Sample Length	Time	Lithology Change (Depth/Ft.) or Screened Level	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
↑	0		6/6	0814	lt. to gray & black sand	loose	gry	silty fine-grnd		dry	NA			
HA			6/6	↓		↓	blck	sand			↓			
↓			6/6											
↓	4		6/6											
						∅								
SS	18		6/6	0910		dense	gry	fine-to med.-grnd		v. wet, HS odor	∅			
↓	20		6/0.5	↓		↓	blk	sand			↓			
SS	20		6/6	0917			brn	laminated med.-		saturated, HS	∅			
↓	22		6/3	↓		↓	blk	grnd sand		odor	↓			

* When rock coring, enter rock brokeness.
** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated response is read.

Remarks:

Drilling Area Background (ppm): ∅

Converted to Well? Yes ✓ No

Well I.D. #: DMW-7 (SB)

BORING LOG

PROJECT NAME: _____ BORING NUMBER: DW-7
PROJECT NUMBER: _____ DATE: _____
DRILLING COMPANY: _____ GEOLOGIST: _____
DRILLING RIG: _____ DRILLER: _____

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows/ 6" or ROD (%)	Sample Rcovery/ Sample Length	Time	Lithology Change (Depth/Ft.) or Screened Level	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
SS ↓	28		6/6				dk brn	coarse sand, trace clay		saturated, H2S odor	Ø			
↓	30		5.25/6			hard	tan	v. sandy clay		dry, no odor	Ø			
								→ outer casing set ←						
								→ 30ft BGS ←						
								NOTE: See DW-8 for lithologic details 30-43 ft						
								Boring Terminated @ 43 ft BGS						

* When rock coring, enter rock brokeness.
** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated response is read.

Remarks: _____

Drilling Area Background (ppm): Ø

Converted to Well? Yes ✓ No _____ Well I.D. #: DW-7

BORING LOG

PROJECT NAME: NTC Orlando - Bldg 2273
PROJECT NUMBER: 2457
DRILLING COMPANY: GPI
DRILLING RIG: Diedrich D-120
BORING NUMBER: DW-8
DATE: 9/8-9/99
GEOLOGIST: S. Barton
DRILLER: Nick Sanzotto

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows/ 6" or ROD (%)	Sample Rcovery/ Sample Length	Time	Lithology Change (Depth/Ft.) or Screened Level	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
↑	0		6/6			loose	grg	fine - to med. - grnd		fill (?)	Ø			
HA			6/6				orange	sand						
↓			6/6											
↓	4		6/6											
SS	18		6/3.75	1554			tan	med. - to coarse - grnd Sand		trace silt, saturated, no odor	Ø			
↓	20			↓			blk	fine - to med. - grnd sand		saturated, no odor	↓			
SS	20		6/6	1557			dk brn	"		some lt grains, saturated, no odor	Ø			
↓	22		1.5	↓							↓			

* When rock coring, enter rock brokeness.
** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated response is read.

Remarks:

Drilling Area Background (ppm): Ø

Converted to Well? Yes ✓ No

Well I.D. #: DW-8

BORING LOG

PROJECT NAME: NTC Orlando - Bldg 2273
PROJECT NUMBER: 7457
DRILLING COMPANY: GPI
DRILLING RIG: Diedrich D-120
BORING NUMBER: DW-8 (SB)
DATE: 9/8-9/99
GEOLOGIST: S. Barton
DRILLER: Nick Smarrito

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows/ 6" or ROD (%)	Sample Recovery/ Sample Length	Time	Lithology Change (Depth/Ft.) or Screened Level	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
SS ↓	28		6 / 6	1605		mod. hard	tan to brn	v. sandy clay,		dry, no odor	Ø			
↓	30		5.5	↓			brn	friable (SET OUTER CASING)			↓			
SS ↓	30			1359										
↓	32			↓										
SS ↓	32		6 / 6	1405		mod. soft	tan	sandy clay		1.25" ribbon, no odor	Ø			
↓	34		6 / 0.75	↓							↓			
SS ↓	34		6 / 3.25	1409							Ø			
↓	36			↓			tan	50%-50% sand & clay		no odor	↓			
SS ↓	36		6 / 6	1415			tan to gray	med.-grnd sand		no odor	Ø			
↓	38		0.5	↓				w/ sparse clay lenses			↓			
SS ↓	38		6 / 6	1419			dk gray	med.- to coarse-grnd sand, trace clay lenses		degraded organic odor	Ø ↓			
SS ↓	40		6 / 5.5	1424				same as above			Ø			
↓	42			↓				//			↓			
								Boring Terminated @ 43 ft BGS						

* When rock coring, enter rock brokeness.
** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated response is read.

Remarks:

Drilling Area Background (ppm): Ø

Converted to Well? Yes ✓ No

Well I.D. #: DW-8

BORING LOG

PROJECT NAME: NTC Orlando - Bldg 2273
PROJECT NUMBER: 7457
DRILLING COMPANY: Groundwater Protection Inc.
DRILLING RIG: Diedrich D-120
BORING NUMBER: DW-9
DATE: 4/ 11-12/ 00
GEOLOGIST: S. Barton
DRILLER: Nick Smarrito

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows/ 6" or ROD (%)	Sample Recovery/ Sample Length	Time	Lithology Change (Depth/Ft.) or Screened Level	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	PID/FID Reading (ppm): Sampler BZ	PID/FID Reading (ppm): Borehole**	PID/FID Reading (ppm): Driller BZ**
↑	0			0830			gray	fine silty sand			0			
HA														
							dark gray	med-grnd. sand		fill - utility ditch				
↓	4													

* When rock coring, enter rock brokeness.
** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated response is read.

Remarks: only one spoon collected to verify depth to clay layer

Drilling Area Background (ppm): 12

Converted to Well? Yes ✓ No _____ Well I.D. #: DW-9

BORING LOG

PROJECT NAME: NTC Orlando - Bldg 2273
PROJECT NUMBER:
DRILLING COMPANY:
DRILLING RIG:
BORING NUMBER: DW-9
DATE:
GEOLOGIST:
DRILLER:

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows/ 6" or ROD (%)	Sample Recovery/ Sample Length	Time	Lithology Change (Depth/Ft.) or Screened Level	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
SS	28		6/6	0846		mod. hard.	tan to lt brn	sandy clay - dry		set outer casing @ 30ft	0			
↓	30		4/2	↓										
								SAND (from cuttings)		SA				
	43							Boring Terminated @ 43ft BGS						

* When rock coring, enter rock brokeness.
** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated response is read.

Remarks:

Drilling Area Background (ppm): 12

Converted to Well? Yes ✓ No

Well I.D. #: DW-9

BORING LOG

PROJECT NAME: NTC Orlando
PROJECT NUMBER: 7457
DRILLING COMPANY: GPI
DRILLING RIG: Diedrich D-120

BORING NUMBER: MW-8
DATE: 9/8/99
GEOLOGIST: S. Barton
DRILLER: Nick Smarrito

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows/ 6" or ROD (%)	Sample Rcovery/ Sample Length	Time	Lithology Change (Depth/Ft.) or Screened Level	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
								NOTE:						
								See DMW-6						
								boring log for						
								lithologic details,						
								No samples collected						
								Boring Terminated						
								@ 15 ft BGS						

* When rock coring, enter rock brokeness.
** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated response is read.

Remarks:

Drilling Area Background (ppm): 0

Converted to Well? Yes ✓ No

Well I.D. #: MW-8

APPENDIX C

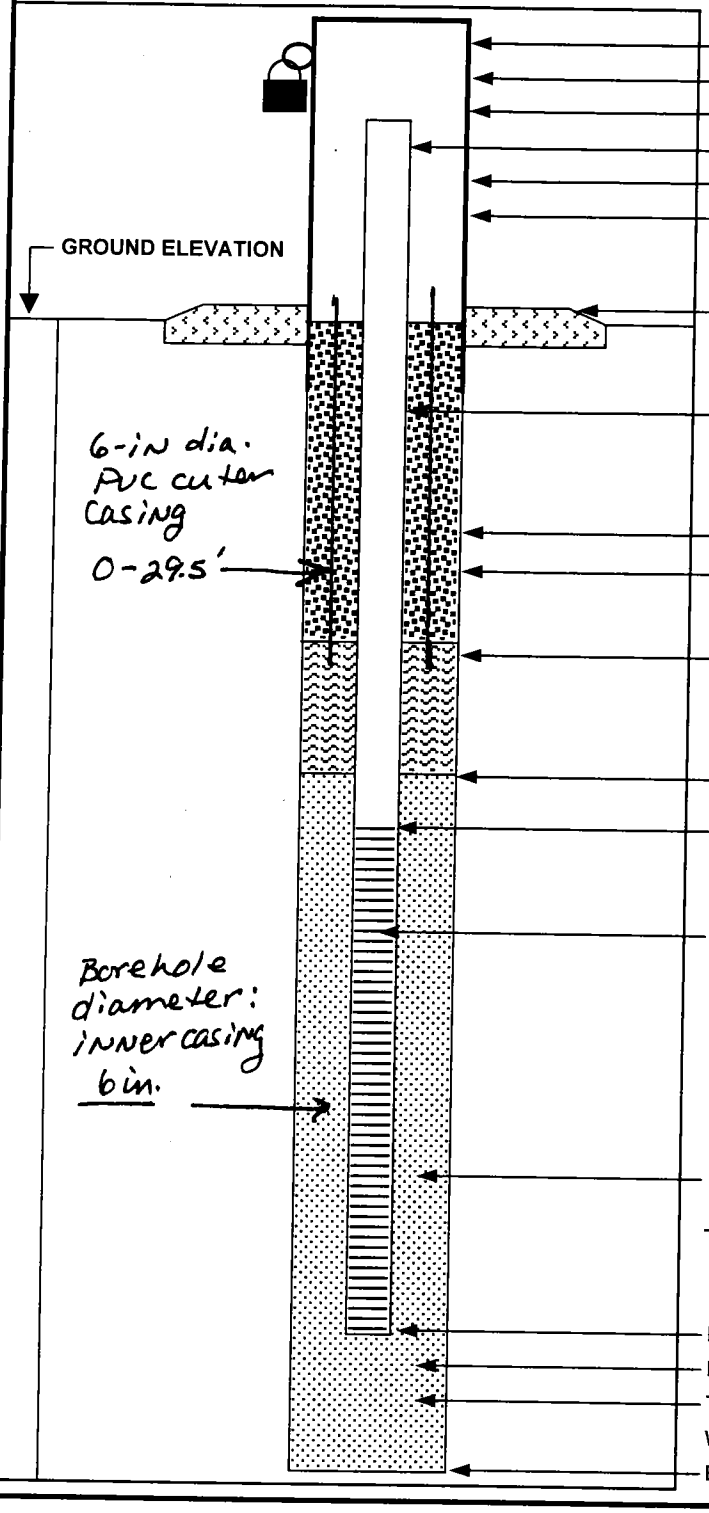
WELL COMPLETION LOGS

WELL NO.: DW-6

OVERBURDEN MONITORING WELL SHEET

PROJECT		LOCATION	BLDG 2273
PROJECT NO.		BORING	DW-6
ELEVATION		DATE	9/22/99
FIELD GEOLOGIST			

DRILLER	Nick Smarrito
METHOD:	
DRILLING	HSA - Mud Rotary
DEVELOPMENT	RediFlo II



ELEVATION OF TOP OF SURFACE CASING:

ELEVATION OF TOP OF RISER PIPE: 118.74 ft

STICK-UP TOP OF SURFACE CASING:

STICK-UP OF RISER PIPE: ≈ 3 ft

I.D. OF SURFACE CASING: 4-in. square

TYPE OF SURFACE CASING: Stainless Steel

TYPE OF SURFACE SEAL: concrete

RISER PIPE I.D.: 2 in.

TYPE OF RISER PIPE: Sch 40 PVC

BOREHOLE DIAMETER: - outer casing = 10.25 in.

TYPE OF SEAL: neat grout (Type I portland cement + powdered bent.)

ELEVATION / DEPTH OF SEAL: 30 ft

TYPE OF SEAL: 3/8 in bent. pellets

DEPTH - TOP OF SAND PACK: 36 ft

ELEVATION / DEPTH - TOP OF SCREEN: 38 ft

TYPE OF SCREEN: PVC

SLOT SIZE X LENGTH: 0.01 in x 5 ft

I.D. OF SCREEN: 2 in.

TYPE OF SAND PACK: 20/30

ELEVATION / DEPTH TO BOTTOM OF SCREEN: 43 ft

ELEVATION / DEPTH TO BOTTOM OF SAND PACK: 43.5 ft

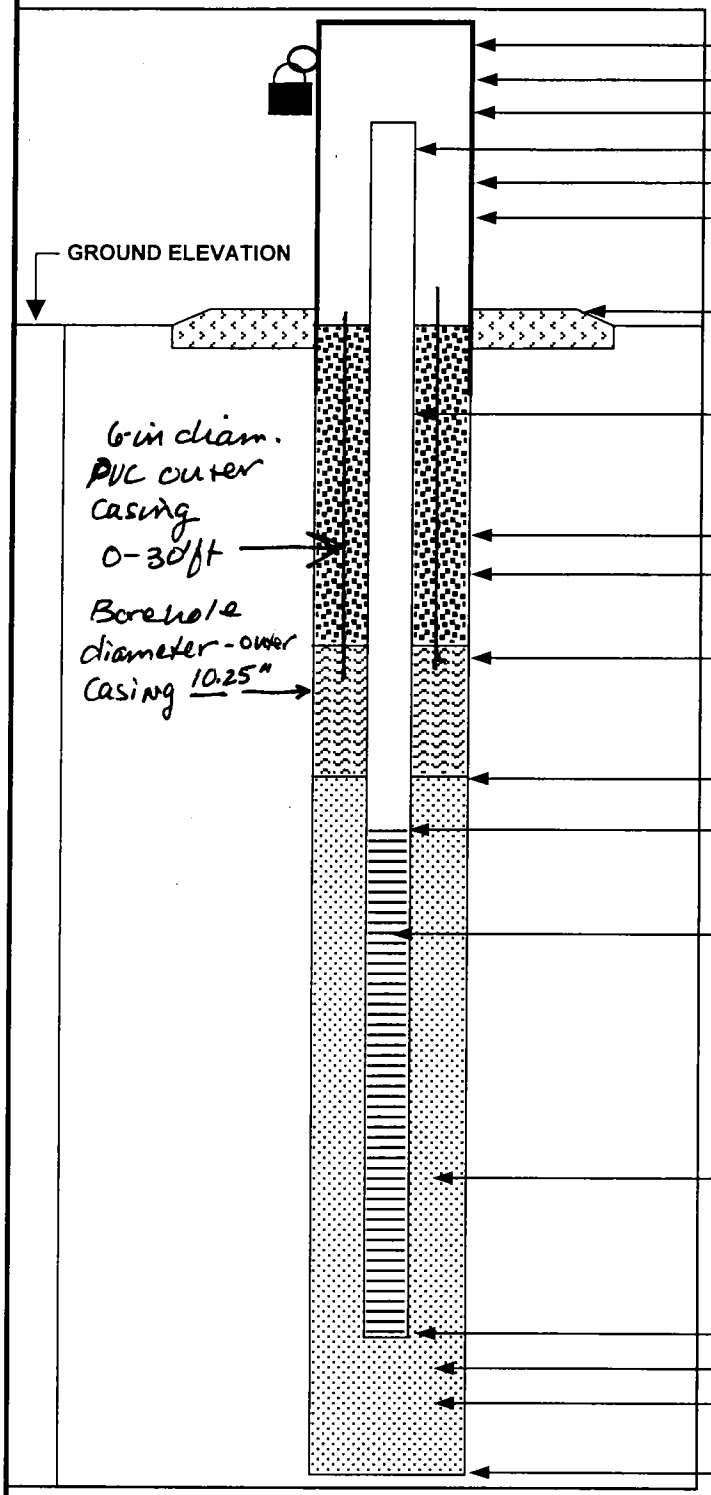
TYPE OF BACKFILL BELOW MONITORING WELL: 20/30 sand

ELEVATION / DEPTH TO BOTTOM OF BOREHOLE: 43.5 ft

WELL NO.: DW-7

OVERBURDEN MONITORING WELL SHEET

PROJECT	NTC Orlando	LOCATION	Bldg 2273	DRILLER	Nidg Smarnito
PROJECT NO.	7457	BORING	DW-7	METHOD:	
ELEVATION	118.38	DATE	9-9-99/9-22-99	DRILLING	HSA/mud rotary
FIELD GEOLOGIST	S Barton / G. Braganza			DEVELOPMENT	Redi Flo II



ELEVATION OF TOP OF SURFACE CASING:

ELEVATION OF TOP OF RISER PIPE: 118.38 ft

STICK-UP TOP OF SURFACE CASING: ≈ 3.35 ft

STICK-UP OF RISER PIPE: ≈ 3.0 ft

I.D. OF SURFACE CASING: 4-in. square

TYPE OF SURFACE CASING: Stainless Steel

TYPE OF SURFACE SEAL: concrete

RISER PIPE I.D.: 2 in.

TYPE OF RISER PIPE: SCH 40 PVC

BOREHOLE DIAMETER: (Inner casing) 6 in.

TYPE OF SEAL: Neat grout (Type I portland cement + powdered bent.)

ELEVATION / DEPTH OF SEAL: 30 ft

TYPE OF SEAL: 3/8" bent. pellets

DEPTH - TOP OF SAND PACK: 36 ft

ELEVATION / DEPTH - TOP OF SCREEN: 38 ft

TYPE OF SCREEN: SCH 40 PVC

SLOT SIZE X LENGTH: 0.01 in. x 5 ft

I.D. OF SCREEN: 2 in.

TYPE OF SAND PACK: 20/30

ELEVATION / DEPTH TO BOTTOM OF SCREEN: 43 ft

ELEVATION / DEPTH TO BOTTOM OF SAND PACK: 43 ft

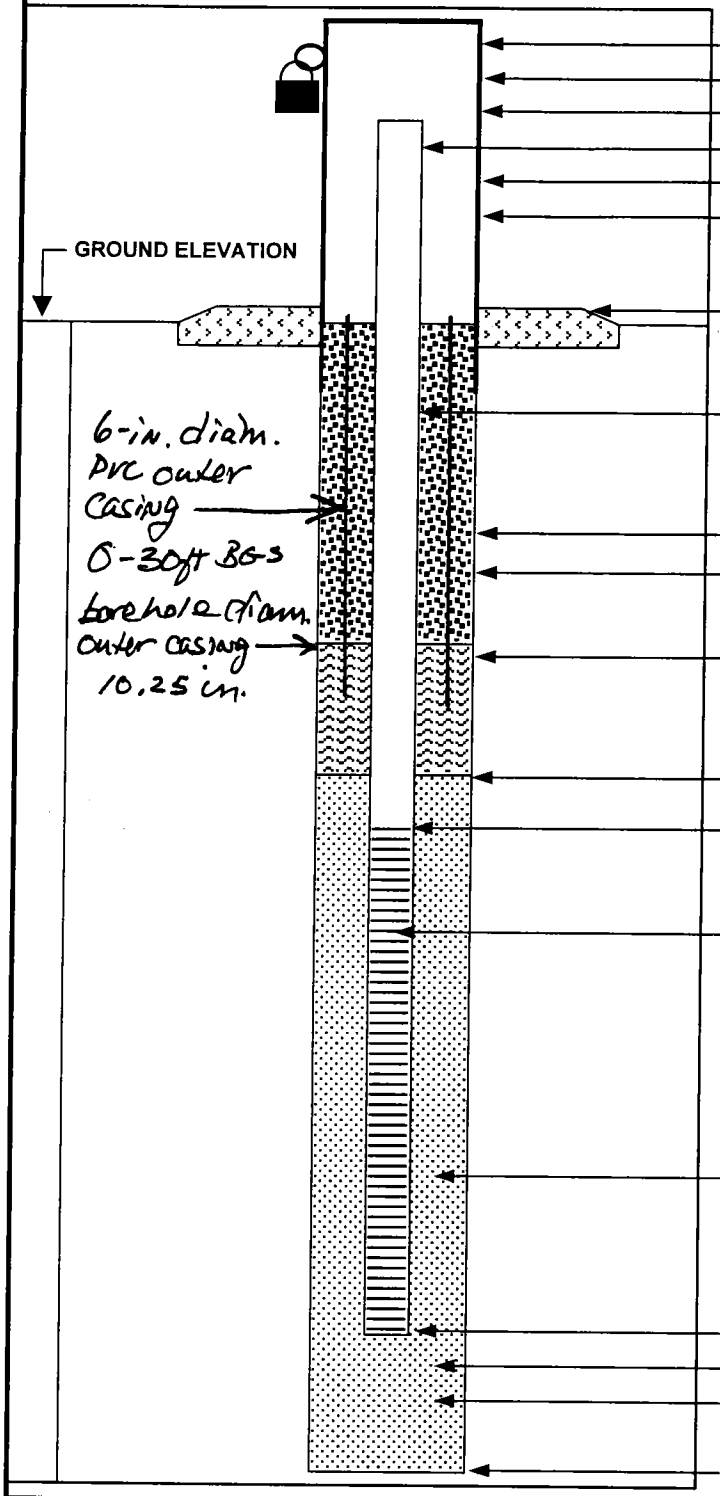
TYPE OF BACKFILL BELOW MONITORING WELL: sand

ELEVATION / DEPTH TO BOTTOM OF BOREHOLE: 43 ft

WELL NO.: DW-8

OVERBURDEN MONITORING WELL SHEET

PROJECT	NTC Orlando	LOCATION	BLDG 2273	DRILLER	Nick
PROJECT NO.	7457	BORING	DW-8	METHOD:	
ELEVATION	119.60ft	DATE	9/8-9/99	DRILLING	HSA/mud rotary
FIELD GEOLOGIST	S. Barton			DEVELOPMENT	RediFlo II



ELEVATION OF TOP OF SURFACE CASING:

ELEVATION OF TOP OF RISER PIPE: 119.60ft

STICK-UP TOP OF SURFACE CASING: ~~3.25ft~~ ≈3.25ft

STICK-UP OF RISER PIPE: ≈3ft

I.D. OF SURFACE CASING: 4-in. square

TYPE OF SURFACE CASING: Stainless Steel

TYPE OF SURFACE SEAL: Concrete

RISER PIPE I.D.: 2 in.

TYPE OF RISER PIPE: SCH 40 PVC

BOREHOLE DIAMETER: (inner casing) 6 in.

TYPE OF SEAL: neat grout (Type I portland cement w/ powdered bent)

ELEVATION / DEPTH OF SEAL: 30ft

TYPE OF SEAL: 3/8" bentonite

DEPTH - TOP OF SAND PACK: 36ft

ELEVATION / DEPTH TOP OF SCREEN: 38ft

TYPE OF SCREEN: PVC

SLOT SIZE X LENGTH: 0.01 in. X 5ft

I.D. OF SCREEN: 2 in.

TYPE OF SAND PACK: 20/30

ELEVATION / DEPTH TO BOTTOM OF SCREEN: 43ft

ELEVATION / DEPTH TO BOTTOM OF SAND PACK: 43ft

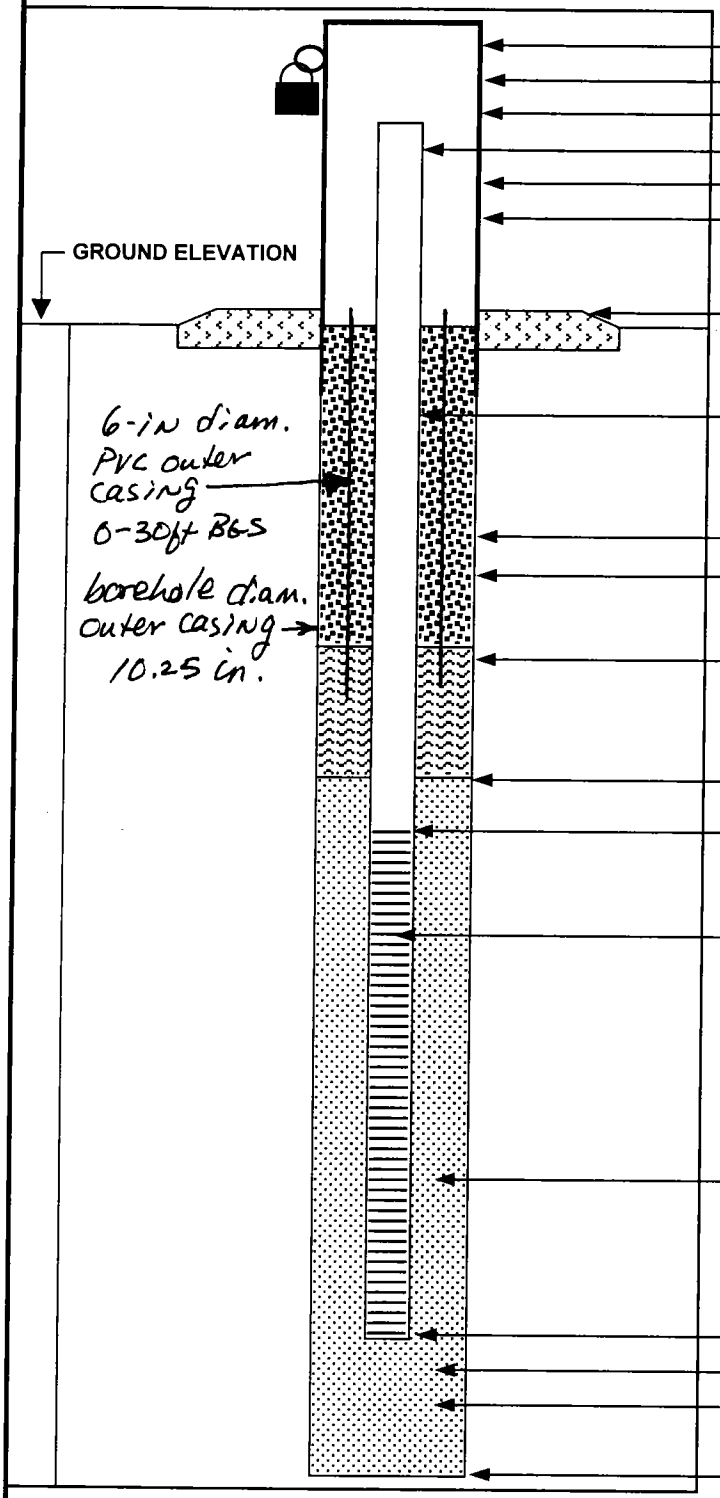
TYPE OF BACKFILL BELOW MONITORING WELL: Sand

ELEVATION / DEPTH TO BOTTOM OF BOREHOLE: 43ft

WELL NO.: DW-9

OVERBURDEN MONITORING WELL SHEET

PROJECT	NTC Orlando	LOCATION	Bldg 2273	DRILLER	Nick Smarrito
PROJECT NO.	7457	BORING	DW-9	METHOD:	
ELEVATION		DATE	4/11-12/00	DRILLING	HSA/mud rotary
FIELD GEOLOGIST	S. Barton			DEVELOPMENT	RediFlow II

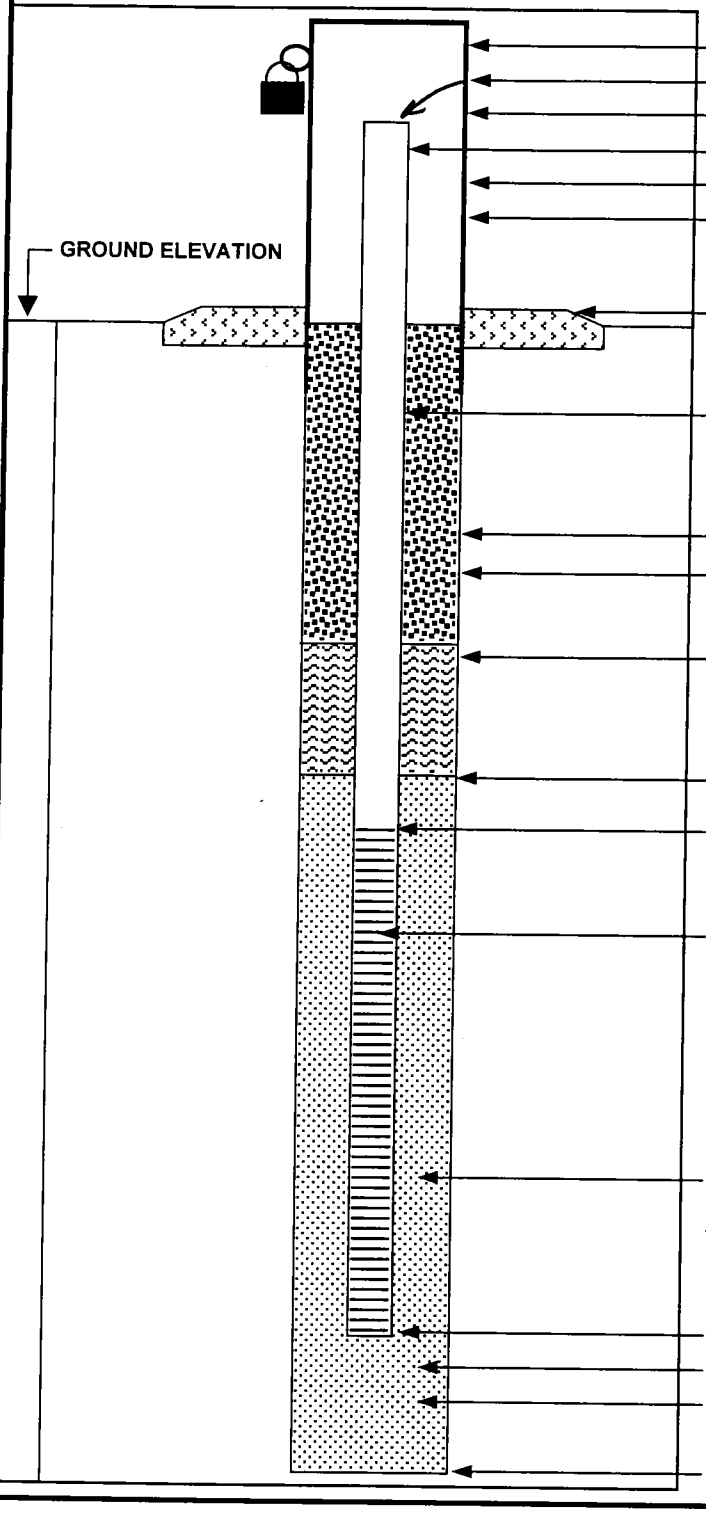


ELEVATION OF TOP OF SURFACE CASING:	
ELEVATION OF TOP OF RISER PIPE:	
STICK-UP TOP OF SURFACE CASING:	3.3 ft
STICK-UP OF RISER PIPE:	3ft
I.D. OF SURFACE CASING:	4-IN. square
TYPE OF SURFACE CASING:	Stainless Steel
TYPE OF SURFACE SEAL:	Concrete
RISER PIPE I.D.:	2 in.
TYPE OF RISER PIPE:	SCH 40 PVC
BOREHOLE DIAMETER:	(inner casing) 6 in.
TYPE OF SEAL:	Neat grout (Type I Portland cement w/ powdered bentonite
ELEVATION / DEPTH OF SEAL:	30ft
TYPE OF SEAL:	3/8 in bentonite chips
DEPTH - TOP OF SAND PACK:	35 ft
ELEVATION / DEPTH - TOP OF SCREEN:	38 ft
TYPE OF SCREEN:	PVC
SLOT SIZE X LENGTH:	0.01 X 5 ft
I.D. OF SCREEN:	2 in.
TYPE OF SAND PACK:	30/65 35-37 ft 20/30 37-43 ft
ELEVATION / DEPTH TO BOTTOM OF SCREEN:	43ft
ELEVATION / DEPTH TO BOTTOM OF SAND PACK:	43ft
TYPE OF BACKFILL BELOW MONITORING WELL:	Sand
ELEVATION / DEPTH TO BOTTOM OF BOREHOLE:	43ft

WELL NO.: MW-8

OVERBURDEN MONITORING WELL SHEET

PROJECT	NTC Orlando	LOCATION	Bldg 2273	DRILLER	Nick Smarrito
PROJECT NO.	7457	BORING	MW-8	METHOD:	
ELEVATION	119.37	DATE	9-8-99	DRILLING	HSA
FIELD GEOLOGIST	S. Barton			DEVELOPMENT	sub pump



ELEVATION OF TOP OF SURFACE CASING:

ELEVATION OF TOP OF RISER PIPE: 119.37

STICK-UP TOP OF SURFACE CASING:

STICK-UP OF RISER PIPE: ≈ 3 ft

I.D. OF SURFACE CASING: 4-in square

TYPE OF SURFACE CASING: stainless steel

TYPE OF SURFACE SEAL: concrete

RISER PIPE I.D.: 2-in

TYPE OF RISER PIPE: PVC

BOREHOLE DIAMETER: 8.5 in.

TYPE OF SEAL: Type I portland grout w/ powdered bentonite

ELEVATION / DEPTH OF SEAL: 0.5 ft

TYPE OF SEAL: 30/65 (fine) sand

DEPTH - TOP OF SAND PACK: 2.5 ft

ELEVATION / DEPTH - TOP OF SCREEN: 5 ft

TYPE OF SCREEN: PVC

SLOT SIZE X LENGTH: 0.01 x 10 ft

I.D. OF SCREEN:

TYPE OF SAND PACK: 20/30

ELEVATION / DEPTH TO BOTTOM OF SCREEN: 15 ft

ELEVATION / DEPTH TO BOTTOM OF SAND PACK: 15.5 ft

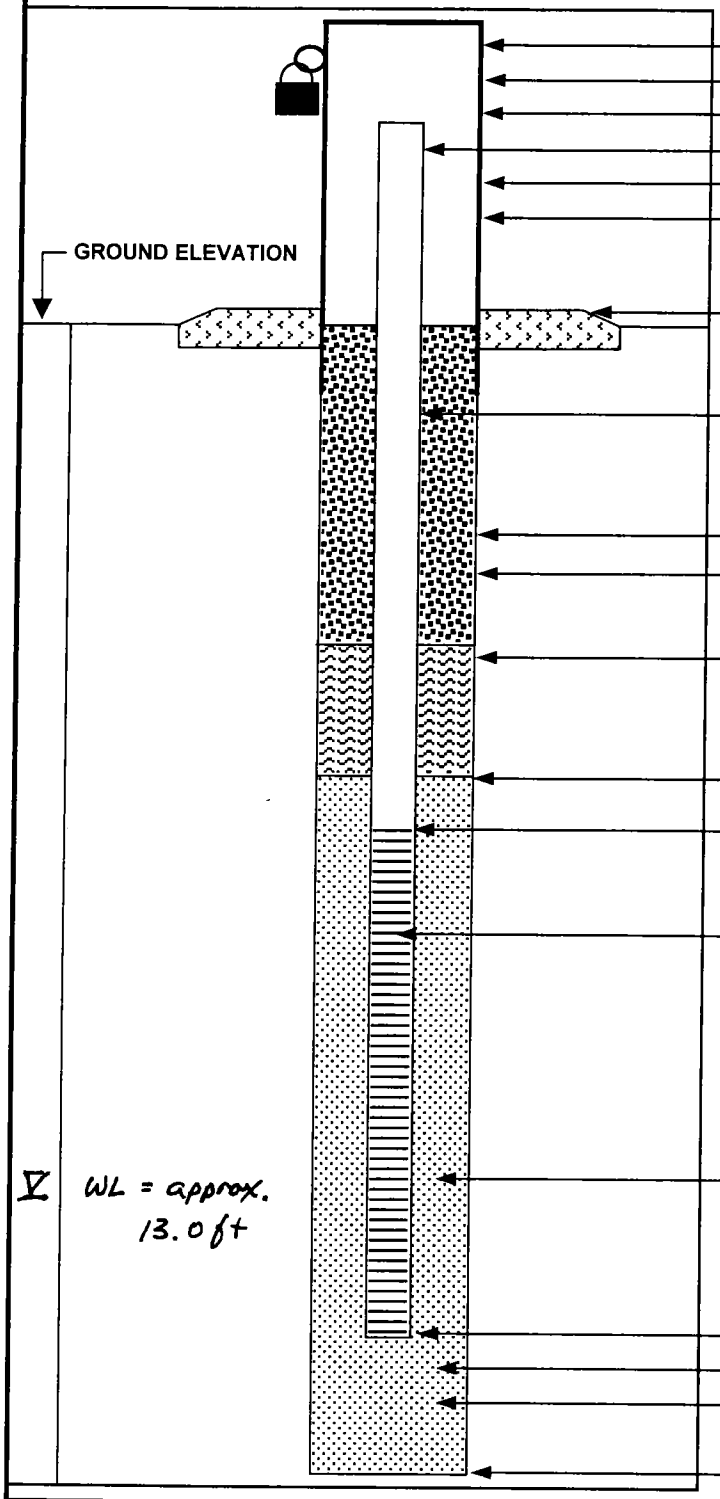
TYPE OF BACKFILL BELOW MONITORING WELL: sand

ELEVATION / DEPTH TO BOTTOM OF BOREHOLE: 15.5 ft

WELL NO.: MW-9

OVERBURDEN MONITORING WELL SHEET

PROJECT	NTC Orlando	LOCATION	BLDG 2273	DRILLER	Nick Smarrito
PROJECT NO.	7457	BORING	MW-9	METHOD:	
ELEVATION	118.68	DATE	9-9-99	DRILLING	HSA
FIELD GEOLOGIST	S. Barton			DEVELOPMENT	RediFlo II



ELEVATION OF TOP OF SURFACE CASING:

ELEVATION OF TOP OF RISER PIPE: 118.68 ft

STICK-UP TOP OF SURFACE CASING: ≈ 3.25 ft

STICK-UP OF RISER PIPE: ≈ 3 ft

I.D. OF SURFACE CASING: 4 in. square

TYPE OF SURFACE CASING: SCH 40 PVC (SB) Stainless Steel

TYPE OF SURFACE SEAL: Concrete

RISER PIPE I.D.: 2 in.

TYPE OF RISER PIPE: SCH 40 PVC

BOREHOLE DIAMETER: 8.5 in.

TYPE OF SEAL: Neat grout (Type I per Hand cement + bent. powder)

ELEVATION / DEPTH OF SEAL: 1.5 ft

TYPE OF SEAL: 30/65 sand

DEPTH - TOP OF SAND PACK: 2.5 ft

ELEVATION / DEPTH - TOP OF SCREEN: 5 ft

TYPE OF SCREEN: SCH 40 PVC

SLOT SIZE X LENGTH: 0.01 in. x 10 ft

I.D. OF SCREEN: 2 in.

TYPE OF SAND PACK: 20/30

ELEVATION / DEPTH TO BOTTOM OF SCREEN: 15 ft

ELEVATION / DEPTH TO BOTTOM OF SAND PACK: 15 ft

TYPE OF BACKFILL BELOW MONITORING WELL: sand

ELEVATION / DEPTH TO BOTTOM OF BOREHOLE: 15 ft

APPENDIX D

TETRA TECH NUS FIELD PERSONNEL

TETRA TECH NUS, INC.
FIELD PERSONNEL

EMPLOYEE	TITLE
Barton, Enoch S.	Geologist
Braganza, Gary A.	Geologist
Margetts, Kevin J.	Field Technician
Morrison, Cher D.	Environmental Specialist
Wellman, Jennifer C.	Geologist

APPENDIX E

GRAIN SIZE ANALYSES

UNIVERSAL
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Consultants In: Geotechnical Engineering • Environmental Sciences •
Construction Materials Testing • Threshold Inspections
3532 Maggie Blvd. • Orlando, FL 32811 • (407) 423-0504 • FAX (407) 423-3106

Project No.: 19924-001-02
Report No. 83833
Date: October 18, 1999

REPORT ON
SIEVE ANALYSIS

Client: Tetra Tech NUS, Inc.
Attn: Mr. Michael Campbell
800 Oak Ridge Turnpike, Suite A-600
Oak Ridge, Tennessee 37830

Project: Naval Training Center, Building No. 2273, City of Orlando, Florida - **P.O. No. 99532**

Date Tested: 10-7-99 **Tested By:** L. Bass

Date Sampled: 10-1-99 **Sample No.:** DW-6-0002

Technician: Client

TEST RESULTS

Sieve No.	Percent Passing
3/4 Inch	100.0
No. 4	100.0
No. 10	99.5
No. 40	94.7
No. 60	71.2
No. 100	19.7
No. 200	6.3

Moisture Content (%)	9.4

Reviewed By:
Universal Engineering Sciences, Inc.

Fred J. Schmaizer, P.E.
Department Manager - Construction Services
STATE OF FLORIDA
Registered Professional Engineers No. 38818

cc: Client (2)
'ra Tech NUS, Inc. (1)

vh(W.O. No. N/S)

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Construction Materials Testing • Threshold Inspections
3532 Maggie Blvd. • Orlando, FL 32811 • (407) 423-0504 • FAX (407) 423-3106

Project No.: 19924-001-02
Report No. 83835
Date: October 18, 1999

REPORT ON
SIEVE ANALYSIS

Client: Tetra Tech NUS, Inc.
Attn: Mr. Michael Campbell
800 Oak Ridge Turnpike, Suite A-600
Oak Ridge, Tennessee 37830

Project: Naval Training Center, Building No. 2273, City of Orlando, Florida - **P.O. No. 99532**

Date Tested: 10-7-99 **Tested By:** L. Bass

Date Sampled: 10-1-99 **Sample No.:** DW-6-0810

Technician: Client

TEST RESULTS

Sieve No.	Percent Passing
3/4 Inch	100.0
No. 4	99.8
No. 10	99.5
No. 40	94.2
No. 60	66.3
No. 100	12.8
No. 200	11.1

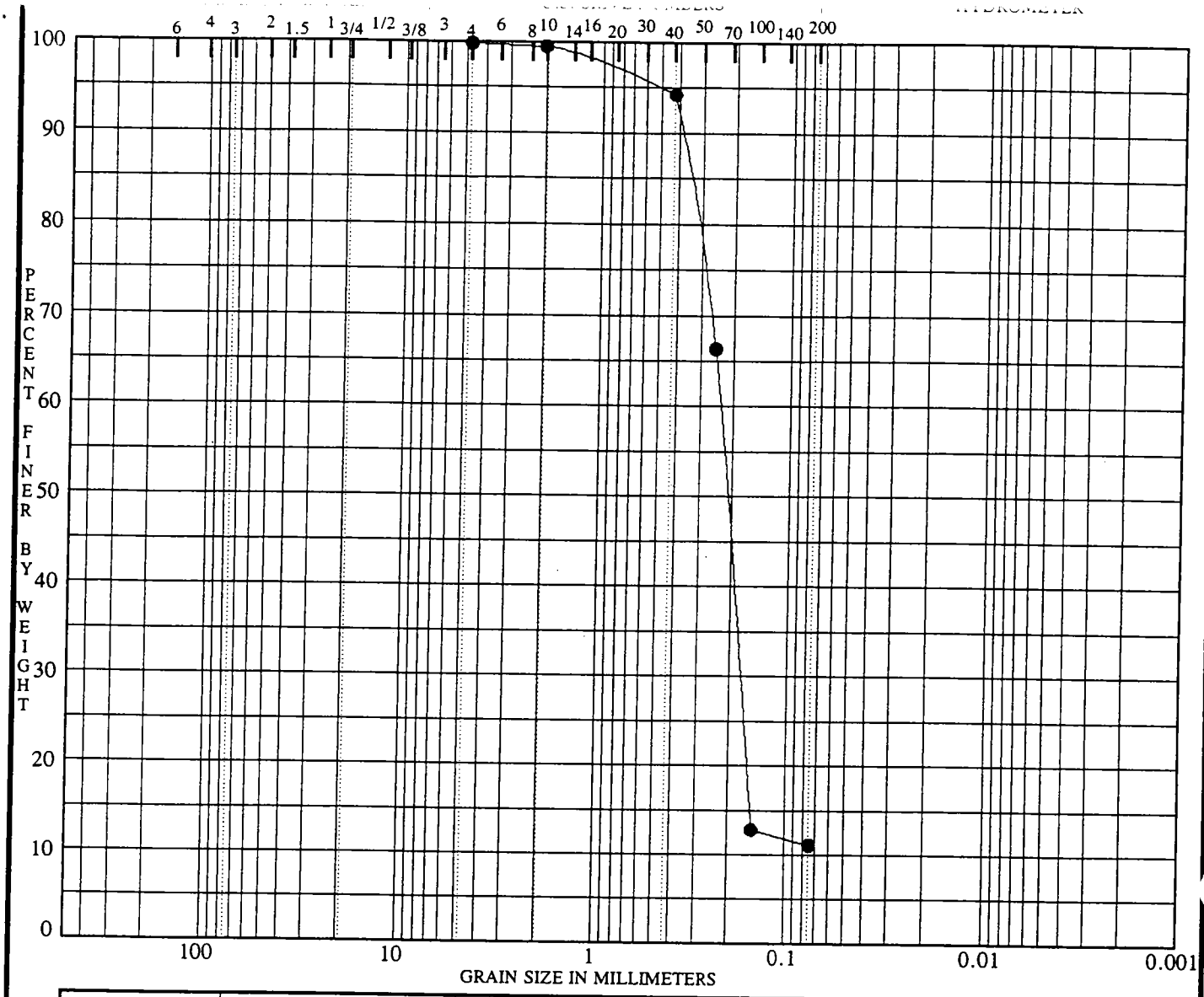
Moisture Content (%)	8.4

Reviewed By:
Universal Engineering Sciences, Inc.

Fred J. Schmalzer, P.E.
Department Manager - Construction Services
STATE OF FLORIDA
Registered Professional Engineers No. 38818

cc: Client (2)
tra Tech NUS, Inc. (1)

vh(W.O. No. N/S)



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	MC%	LL	PL	PI	Cc	Cu
●	DW-6	10.0		8					

	Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	DW-6	10.0		0.24	0.177			88.7	11.1	

PROJECT NTC ORLANDO--BUILDING 2273 - FL

JOB NO. LB044

DATE 10/08/99

GRADATION CURVES

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Construction Materials Testing • Threshold Inspections
3532 Maggie Blvd. • Orlando, FL 32811 • (407) 423-0504 • FAX (407) 423-3106

Project No.: 19924-001-02
Report No. 83838
Date: October 18, 1999

REPORT ON
SIEVE ANALYSIS

Client: Tetra Tech NUS, Inc.
Attn: Mr. Michael Campbell
800 Oak Ridge Turnpike, Suite A-600
Oak Ridge, Tennessee 37830

Project: Naval Training Center, Building No. 2273, City of Orlando, Florida - **P.O. No. 99532**

Date Tested: 10-7-99 **Tested By:** L. Bass

Date Sampled: 10-1-99 **Sample No.:** DW-6-1012

Technician: Client

TEST RESULTS

Sieve No.	Percent Passing
3/4 Inch	100.0
No. 4	100.0
No. 10	100.0
No. 40	97.5
No. 60	76.2
No. 100	13.7
No. 200	4.5

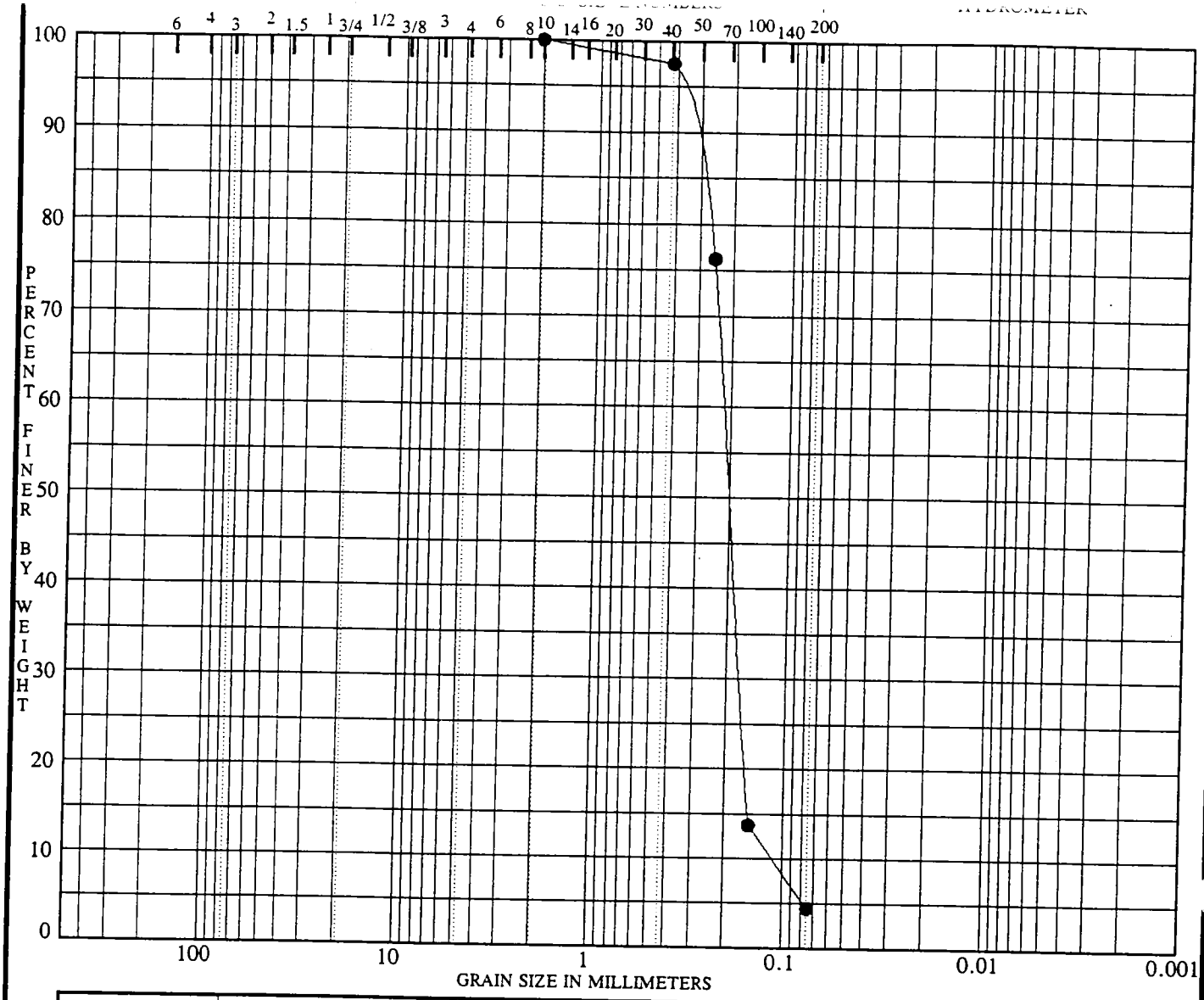
Moisture Content (%)	21.2

Reviewed By:
Universal Engineering Sciences, Inc.

Fred J. Schmaltzer, P.E.
Department Manager - Construction Services
STATE OF FLORIDA
Registered Professional Engineers No. 38818

cc: Client (2)
Tetra Tech NUS, Inc. (1)

vh(W.O. No. N/S)



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	MC%	LL	PL	PI	Cc	Cu
●	DW-6	12.0		21				1.18	1.9

	Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	DW-6	12.0	2.00	0.22	0.171	0.1135	0.0	95.5	4.5	

PROJECT NTC ORLANDO--BUILDING 2273 - FL

JOB NO. LB044

DATE 10/08/99

GRADATION CURVES

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3532 Maggie Blvd. • Orlando, FL 32811 • (407) 423-0504 • FAX (407) 423-3106

Project No.: 19924-001-02
Report No. 83839
Date: October 18, 1999

REPORT ON SIEVE ANALYSIS

Client: Tetra Tech NUS, Inc.
Attn: Mr. Michael Campbell
800 Oak Ridge Turnpike, Suite A-600
Oak Ridge, Tennessee 37830

Project: Naval Training Center, Building No. 2273, City of Orlando, Florida - **P.O. No. 99532**

Date Tested: 10-7-99 **Tested By:** L. Bass

Date Sampled: 10-1-99 **Sample No.:** DW-6-1820

Technician: Client

TEST RESULTS

Sieve No.	Percent Passing
3/4 Inch	100.0
No. 4	100.0
No. 10	100.0
No. 40	96.2
No. 60	63.4
No. 100	14.1
No. 200	5.3

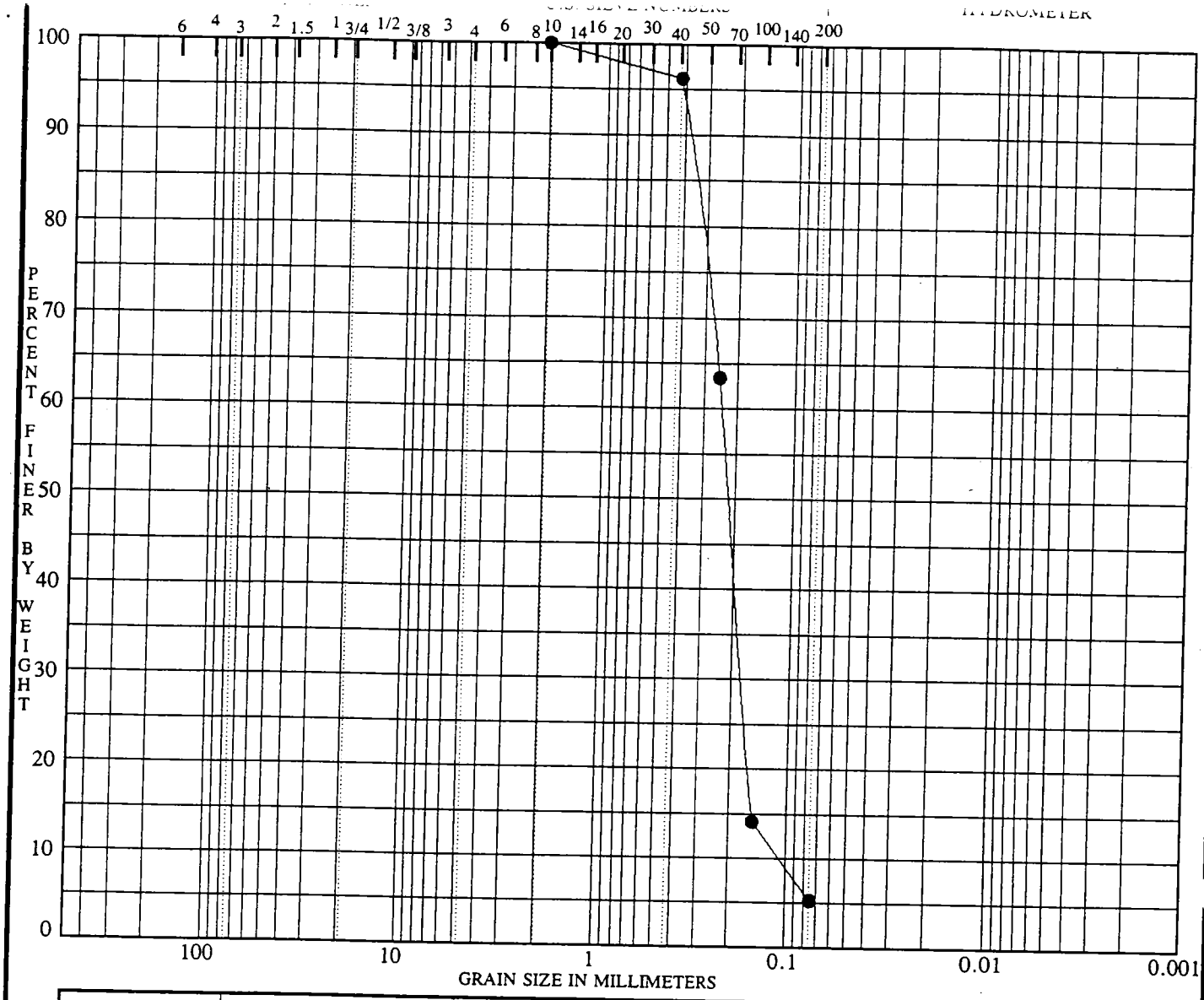
Moisture Content (%)	21.4

Reviewed By:
Universal Engineering Sciences, Inc.

Fred J. Schmalzer, P.E.
Department Manager - Construction Services
STATE OF FLORIDA
Registered Professional Engineers No. 38818

cc: Client (2)
Tetra Tech NUS, Inc. (1)

vh(W.O. No. N/S)



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	MC%	LL	PL	PI	Cc	Cu
●	DW-6	20.0		21				1.19	2.2

	Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	DW-6	20.0	2.00	0.24	0.177	0.1086	0.0	94.7	5.3	

PROJECT NTC ORLANDO--BUILDING 2273 - FL

JOB NO. LB044

DATE 10/08/99

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3532 Maggie Blvd. • Orlando, FL 32811 • (407) 423-0504 • FAX (407) 423-3106

Project No.: 19924-001-02
Report No. 83841
Date: October 18, 1999

REPORT ON SIEVE ANALYSIS

Client: Tetra Tech NUS, Inc.
Attn: Mr. Michael Campbell
800 Oak Ridge Turnpike, Suite A-600
Oak Ridge, Tennessee 37830

Project: Naval Training Center, Building No. 2273, City of Orlando, Florida - **P.O. No. 99532**

Date Tested: 10-7-99 **Tested By:** L. Bass

Date Sampled: 10-1-99 **Sample No.:** DW-6-2224

Technician: Client

TEST RESULTS

Sieve No.	Percent Passing
3/4 Inch	100.0
No. 4	100.0
No. 10	100.0
No. 40	92.3
No. 60	48.6
No. 100	10.9
No. 200	4.8

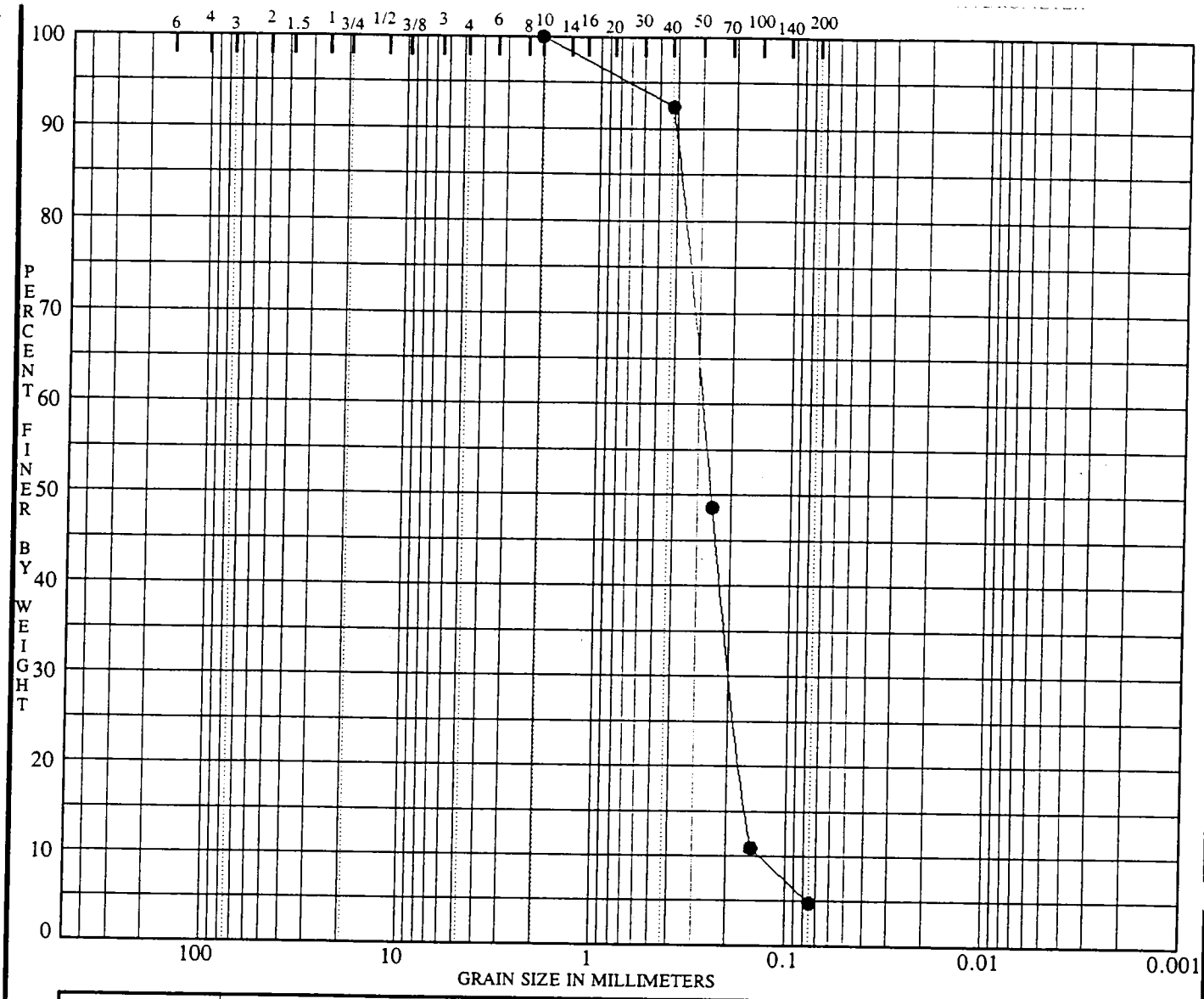
Moisture Content (%)	19.8

Reviewed By:
Universal Engineering Sciences, Inc.

Fred J. Schmalzer, P.E.
Department Manager - Construction Services
STATE OF FLORIDA
Registered Professional Engineers No. 38818

cc: Client (2)
Tetra Tech NUS, Inc. (1)

vh(W.O. No. N/S)



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	MC%	LL	PL	PI	Cc	Cu
●	DW-6	24.0		20				0.97	2.1

	Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	DW-6	24.0	2.00	0.29	0.194	0.1354	0.0	95.2	4.8	

PROJECT NTC ORLANDO--BUILDING 2273 - FL

JOB NO. LB044

DATE 10/08/99

GRADATION CURVES

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Project No.: 19924-001-02
Report No. 83843
Date: October 18, 1999

REPORT ON SIEVE ANALYSIS

Client: Tetra Tech NUS, Inc.
Attn: Mr. Michael Campbell
800 Oak Ridge Turnpike, Suite A-600
Oak Ridge, Tennessee 37830

Project: Naval Training Center, Building No. 2273, City of Orlando, Florida - **P.O. No. 99532**

Date Tested: 10-7-99 **Tested By:** L. Bass

Date Sampled: 10-1-99 **Sample No.:** DW-6-2628

Technician: Client

TEST RESULTS

Sieve No.	Percent Passing
3/4 Inch	100.0
No. 4	100.0
No. 10	100.0
No. 40	95.9
No. 60	75.3
No. 100	30.5
No. 200	12.5

Moisture Content (%)	19.2

Reviewed By:
Universal Engineering Sciences, Inc.

Fred J. Schmalzer, P.E.
Department Manager - Construction Services
STATE OF FLORIDA
Registered Professional Engineers No. 38818

cc: Client (2)
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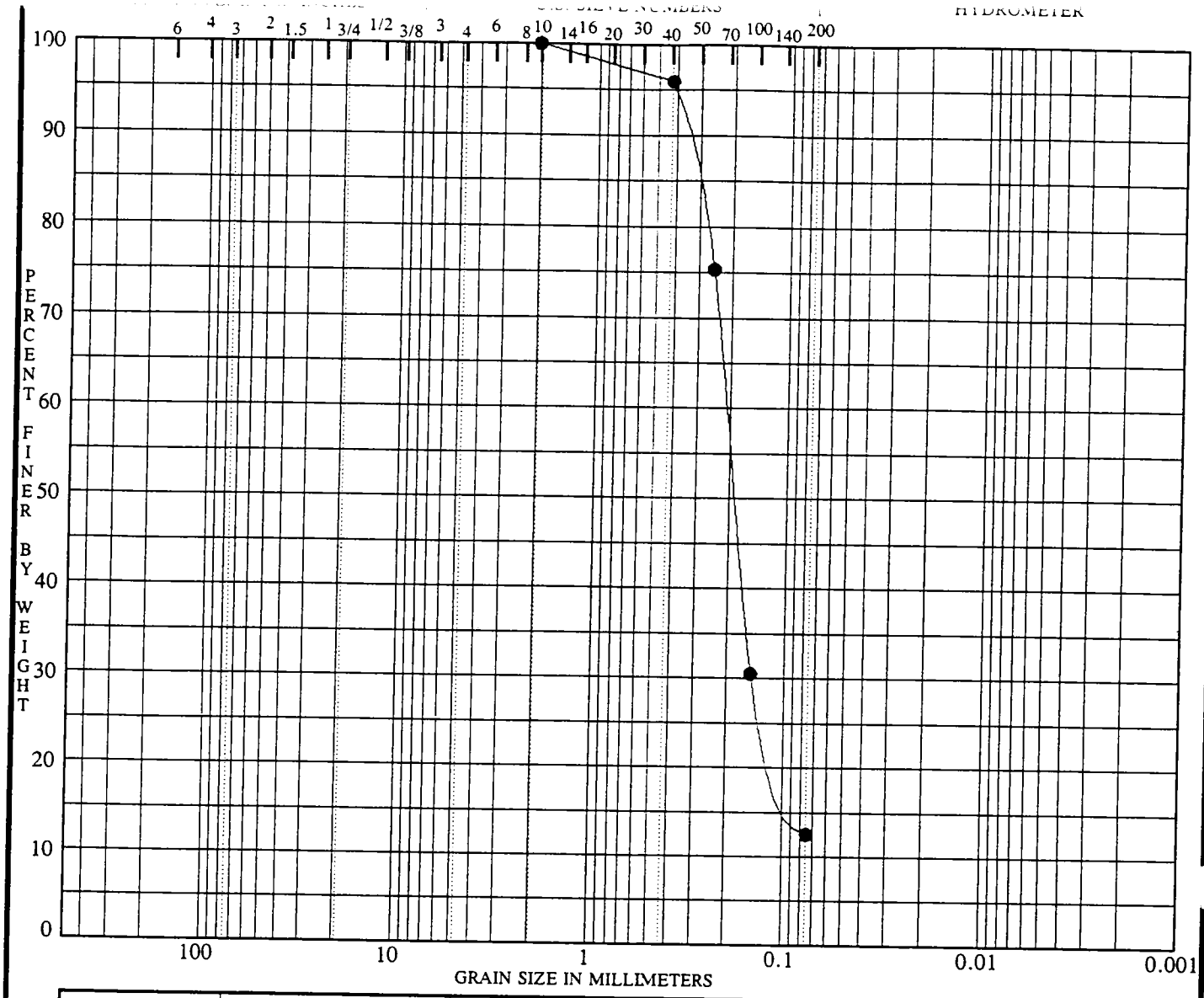
vh(W.O. No. N/S)



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	MC%	LL	PL	PI	Cc	Cu
●	DW-6	28.0		19					

	Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	DW-6	28.0	2.00	0.21	0.147		0.0	87.5	12.5	

PROJECT NTC ORLANDO--BUILDING 2273 - FL

JOB NO. LB044

DATE 10/08/99

GRADATION CURVES

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3532 Maggie Blvd. • Orlando, FL 32811 • (407) 423-0504 • FAX (407) 423-3106

Project No.: 19924-001-02
Report No. 83845
Date: October 18, 1999

REPORT ON SIEVE ANALYSIS

Client: Tetra Tech NUS, Inc.
Attn: Mr. Michael Campbell
800 Oak Ridge Turnpike, Suite A-600
Oak Ridge, Tennessee 37830

Project: Naval Training Center, Building No. 2273, City of Orlando, Florida - **P.O. No. 99532**

Date Tested: 10-7-99 **Tested By:** L. Bass

Date Sampled: 10-1-99 **Sample No.:** DW-6-2830

Technician: Client

TEST RESULTS

Sieve No.	Percent Passing
3/4 Inch	100.0
No. 4	100.0
No. 10	100.0
No. 40	96.8
No. 60	88.5
No. 100	66.0
No. 200	44.1

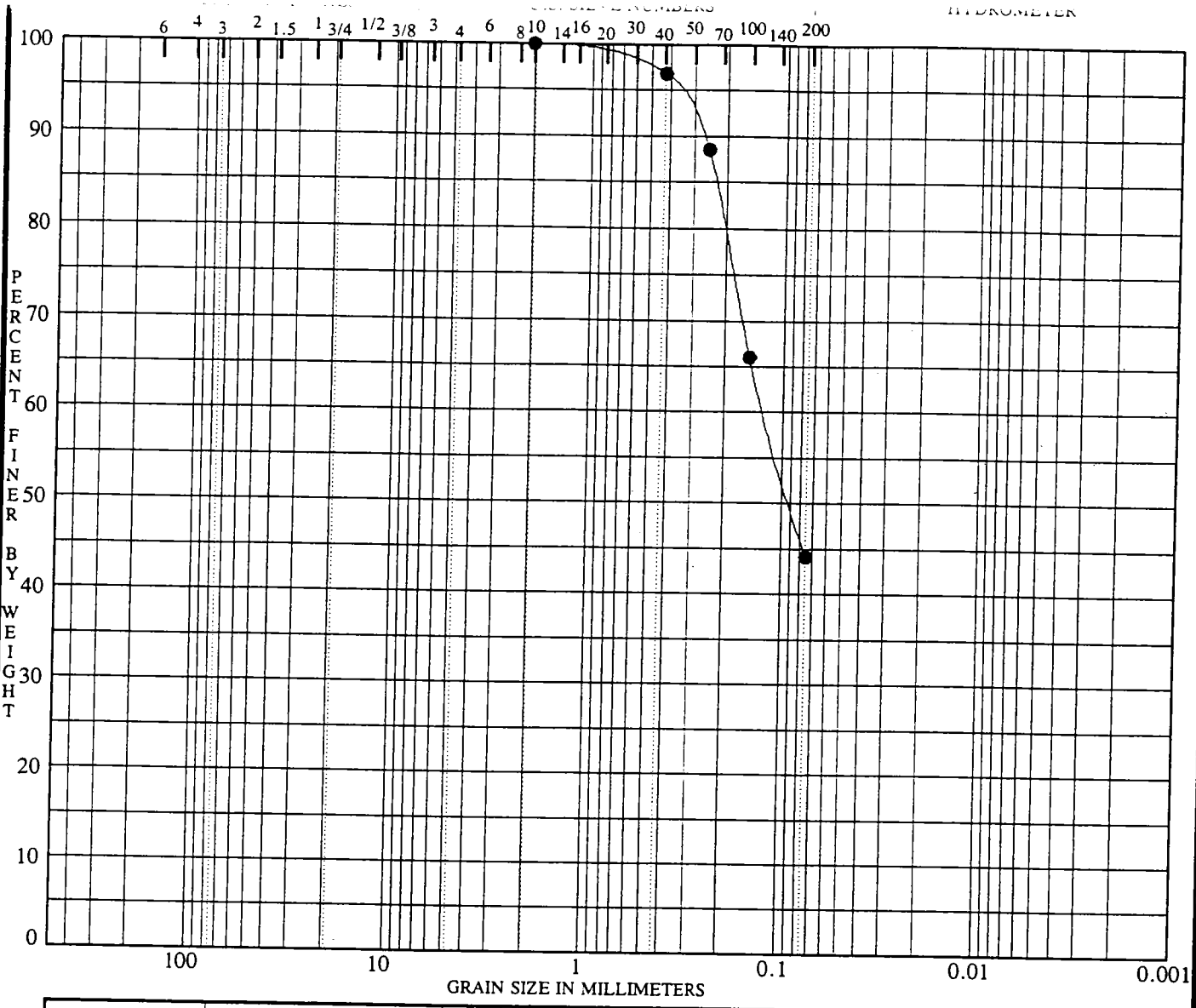
Moisture Content (%)	23.0

Reviewed By:
Universal Engineering Sciences, Inc.

Fred J. Schmalzer, P.E.
Department Manager - Construction Services
STATE OF FLORIDA
Registered Professional Engineers No. 38818

cc: Client (2)
Tetra Tech NUS, Inc. (1)

vh(W.O. No. N/S)



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification		Classification	MC%	LL	PL	PI	Cc	Cu
● DW-6	30.0		23					

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● DW-6	30.0	2.00	0.12			0.0	55.9	44.1	

PROJECT NTC ORLANDO--BUILDING 2273 - FL

JOB NO. LB044

DATE 10/08/99

GRADATION CURVES

UNIVERSAL ENGINEERING SCIENCES

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Consultants In: Geotechnical Engineering • Environmental Sciences •
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3532 Maggie Blvd. • Orlando, FL 32811 • (407) 423-0504 • FAX (407) 423-3106

Project No.: 19924-001-02
Report No. 83846
Date: October 18, 1999

REPORT ON
SIEVE ANALYSIS

Client: Tetra Tech NUS, Inc.
Attn: Mr. Michael Campbell
800 Oak Ridge Turnpike, Suite A-600
Oak Ridge, Tennessee 37830

Project: Naval Training Center, Building No. 2273, City of Orlando, Florida - **P.O. No. 99532**

Date Tested: 10-7-99 **Tested By:** L. Bass

Date Sampled: 10-1-99 **Sample No.:** DW-8-3840

Technician: Client

TEST RESULTS

Sieve No.	Percent Passing
3/4 Inch	100.0
No. 4	100.0
No. 10	100.0
No. 40	99.6
No. 60	96.4
No. 100	58.0
No. 200	11.6

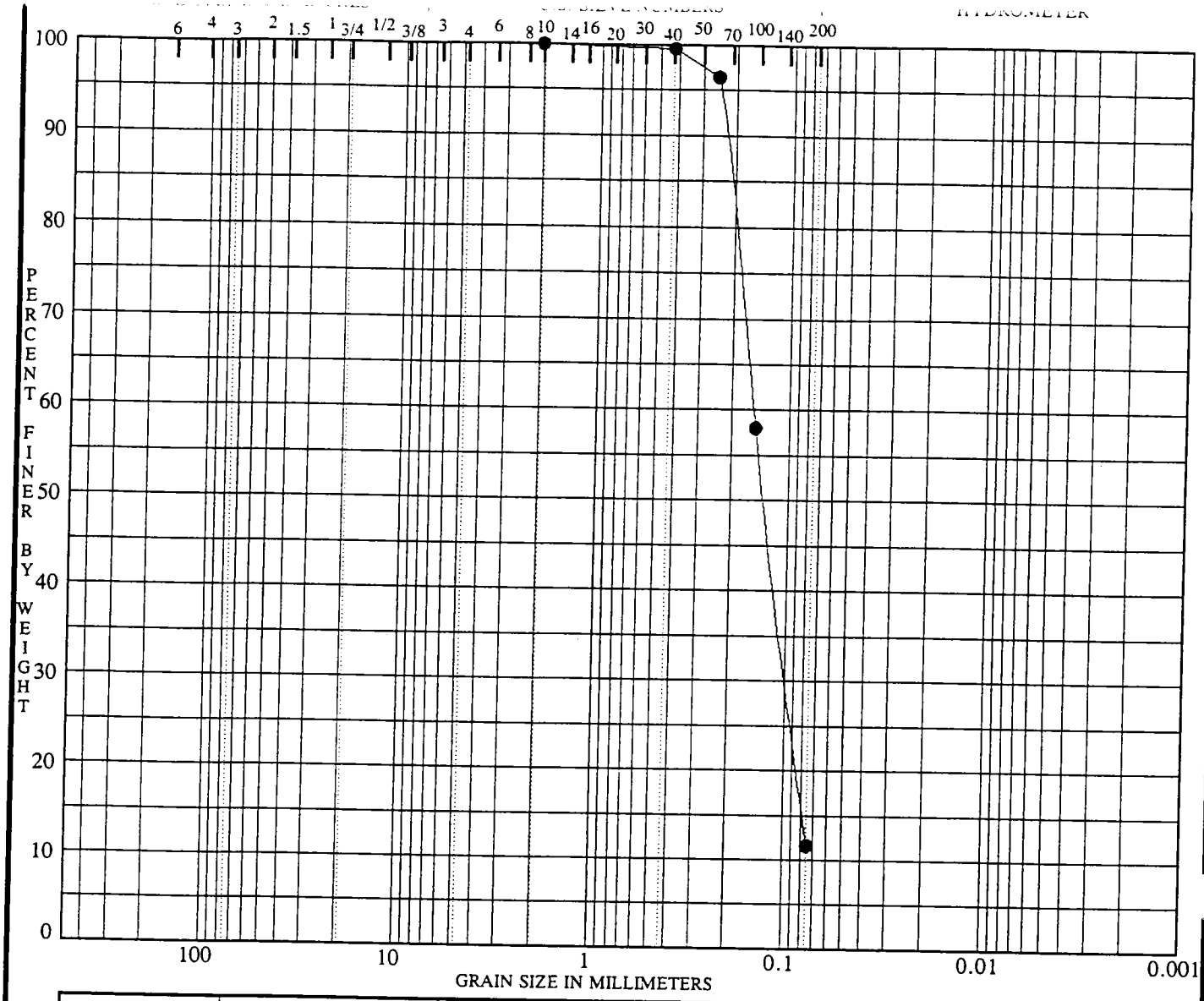
Moisture Content (%)	30.7

Reviewed By
Universal Engineering Sciences, Inc.

Fred J. Schmalzer, P.E.
Department Manager - Construction Services
STATE OF FLORIDA
Registered Professional Engineers No. 38818

cc: Client (2)
Tetra Tech NUS, Inc. (1)

vh(W.O. No. N/S)



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification		Classification	MC%	LL	PL	PI	Cc	Cu
● DW-8	40.0		31				0.90	2.2

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● DW-8	40.0	2.00	0.15	0.099		0.0	88.4	11.6	

PROJECT NTC ORLANDO--BUILDING 2273 - FL

JOB NO. LB044

DATE 10/08/99

GRADATION CURVES

UNIVERSAL ENGINEERING SCIENCES

ORLANDO, FLORIDA

UNIVERSAL
ENGINEERING SCIENCES
Consultants In: Geotechnical Engineering • Environmental Sciences •
Construction Materials Testing • Threshold Inspections
3532 Maggie Blvd. • Orlando, FL 32811 • (407) 423-0504 • FAX (407) 423-3106

Project No.: 19924-001-02
Report No. 83847
Date: October 18, 1999

REPORT ON SIEVE ANALYSIS

Client: Tetra Tech NUS, Inc.
Attn: Mr. Michael Campbell
800 Oak Ridge Turnpike, Suite A-600
Oak Ridge, Tennessee 37830

Project: Naval Training Center, Building No. 2273, City of Orlando, Florida - **P.O. No. 99532**

Date Tested: 10-7-99 **Tested By:** L. Bass

Date Sampled: 10-1-99 **Sample No.:** DW-8-4042

Technician: Client

TEST RESULTS

Sieve No.	Percent Passing
3/4 Inch	100.0
No. 4	97.8
No. 10	97.7
No. 40	94.2
No. 60	77.4
No. 100	31.9
No. 200	8.5

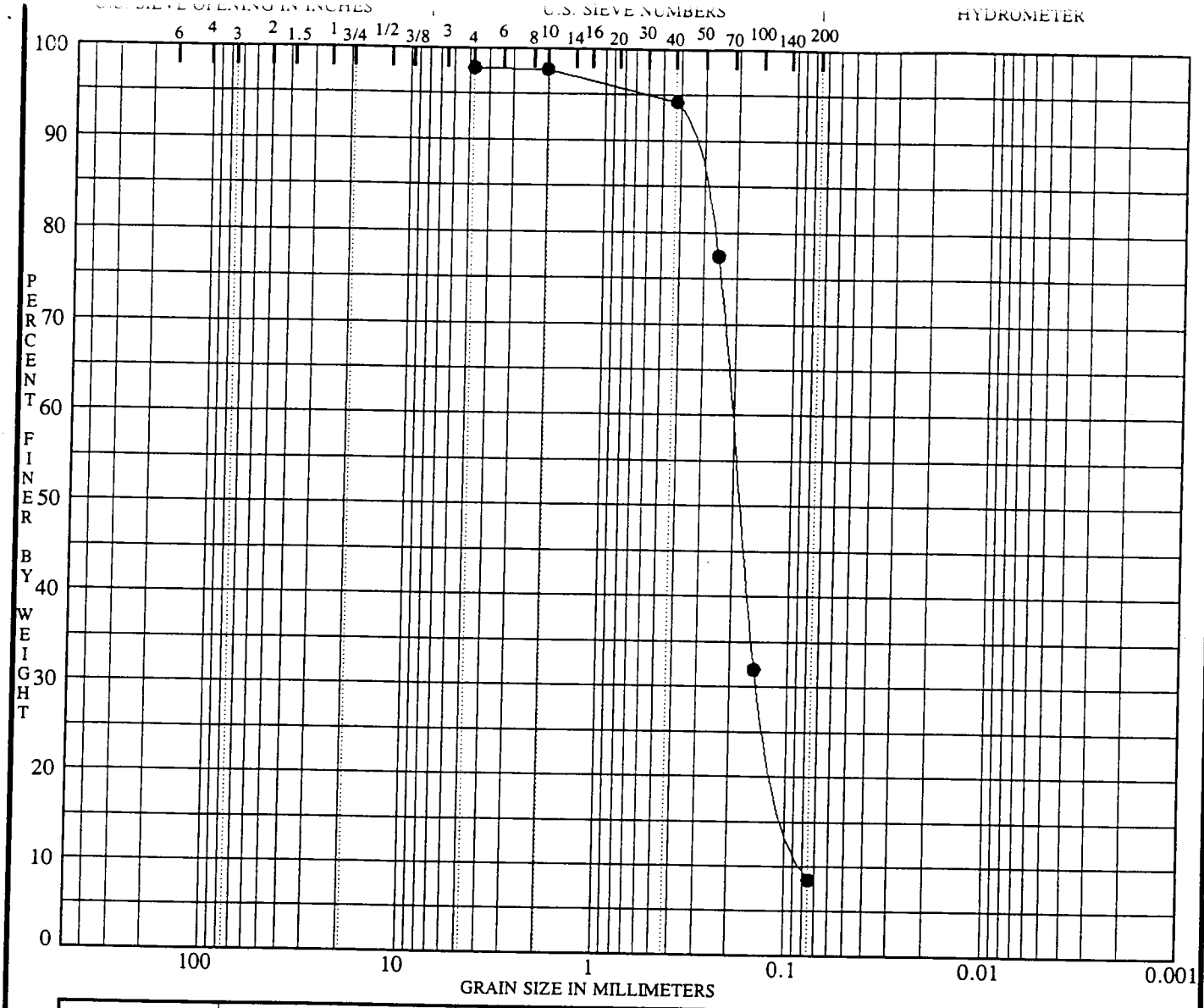
Moisture Content (%)	14.0

Reviewed By,
Universal Engineering Sciences, Inc.

Fred J. Schmalzer, P.E.
Department Manager - Construction Services
STATE OF FLORIDA
Registered Professional Engineers No. 38818

cc: Client (2)
Tetra Tech NUS, Inc. (1)

vh(W.O. No. N/S)



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification		Classification	MC%	LL	PL	PI	Cc	Cu
● DW-8	42.0		14					

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● DW-8	42.0		0.21	0.142	0.0784		89.3	8.5	

PROJECT NTC ORLANDO--BUILDING 2273 - FL

JOB NO. LB044

DATE 10/08/99

GRADATION CURVES

UNIVERSAL ENGINEERING SCIENCES

ORLANDO, FLORIDA

Project: NTC ORLANDO--BUILDING 2273 Job Number: LB044 Sheet 1 of 1

Manager: CLIENT Client: TETRA TECH NUS Project Description:

Location: FL

Elevation Datum:

Boring Depth Elev.	Specimen Description LL	PL	PI	No 200	Water Content	Organic Content	ASTM Class	K ft/day	Sieve Analysis No 4	No 10	No 40	No 60	No 100
DW-6 2.0				6.3	9.4				100.0	99.5	94.7	71.2	19.7
DW-6 10.0				11.1	8.4				99.8	99.5	94.2	66.3	12.8
DW-6 12.0				4.5	21.2				100.0	100.0	97.5	76.2	13.7
DW-6 20.0				5.3	21.4				100.0	100.0	96.2	63.4	14.1
DW-6 24.0				4.8	19.8				100.0	100.0	92.3	48.6	10.9
DW-6 28.0				12.5	19.2				100.0	100.0	95.9	75.3	30.5
DW-6 30.0				44.1	23.0				100.0	100.0	96.8	88.5	66.0
DW-8 40.0				11.6	30.7				100.0	100.0	99.6	96.4	58.0
DW-8 42.0				8.5	14.0				97.8	97.7	94.2	77.4	31.9

Summary of Material Properties

UNIVERSAL ENGINEERING SCIENCES, INC.
ORLANDO, FLORIDA

APPENDIX F

GROUNDWATER SAMPLING LOGS

Date 10/02/99

GROUNDWATER PURGING AND SAMPLING LOG

Page 1 of 1

Project Site Name: NTC Orlando
Project No.: CTO 0024

[ ] Domestic Well Data
[X] Monitoring Well Data
[ ] Other Well Type:

Sample ID No.: N2273GDW0510
Sample Location: BLDG 2273
Sampled By: Skip Barton
C.O.C. No.: 58190

PURGING DATA

Casing Size (In.)	Gals/Ft. of Water	Time Hr:Min	pH pH units	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	ORP mV	DTW ft BTOC	Flow Rate ml/min
1	0.041	1345	4.83	124	28.55	72.4	2.29	78.3	10.61	100
(2)	0.163	1350	4.61	104	29.04	52.4	1.50	73.7	10.61	90
3	0.367	1355	4.52	94	29.21	54.5	1.36	69.5	10.64	90
4	0.653	1400	4.46	93	28.73	65.1	1.29	61.2	10.62	80
5	1.020	1405	4.43	92	28.55	71.3	1.29	53.3	10.62	85
6	1.469	1410	4.42	92	28.48	Ø	1.30	45.3	10.59	90
8	2.611	1415	4.42	91	28.51	Ø	1.35	37.6	10.59	90
10	4.080	1420	4.42	91	28.73	Ø	1.38	34.1	10.59	90
		1425	4.43	91	28.95	Ø	1.40	31.3	10.59	90
		1430	4.43	90	28.98	Ø	1.44	26.6	10.59	90
		1435	4.43	90	29.22	Ø	1.47	25.0	10.58	90
		1440	4.43	90	28.95	Ø	1.49	22.1	10.59	90
Well Casing Diameter: 2 in.		1445	4.43	91	28.82	Ø	1.52	18.8	10.59	90
Total Well Depth (TD): 32.12		1450	4.42	90	28.36	Ø	1.53	14.1	10.59	90
Static Water Level (WL): 10.22		1455	4.42	90	28.38	Ø	1.54	13.9	10.59	90
One Casing Volume (gal/L): 3.57		1500	4.42	90	28.58	Ø	1.56	14.1	10.59	90
10' screen = 1.63 gal.										
[3.78 ~~gal/L~~] 4 gals										
Start Purge (hrs): 1340										
End Purge (hrs): 1500										
Total Purge Time (min): 160										
Total Vol. Purged (gal): 1,435										

SAMPLE PARAMETERS

	Color Description	pH pH units	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	ORP mV	DTW ft BTOC	Flow Rate ml/min
Date: 10/02/99									
Time: 1510	Lt yel/brn	4.42	90	28.57	Ø	1.55	14.0	10.59	90

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
~~Gross Alpha/Gross Beta/Total Uranium/Radium 226~~	~~HNO3 (pH < 2)~~	~~1 - 1 gal plastic cubitainer~~	
PAH	None	1L glass (amber)	6
VOC	HCL	40 mL glass VOA	6

ADDITIONAL INFORMATION

OVA Reading (ppm): Ø

Method:
[X] Peristaltic Pump
[ ] Centrifugal Pump
[ ] Bladder Pump
[X] Tube Evacuation
[X] Vacuum Jug Assembly
[ ] Bailer

Tubing Type:
[ ] Polyethylene
[ ] Teflon
[X] Teflon-lined Polyethylene

Circle if Applicable:
MS/MSD

Duplicate ID No.: N2273D~~RB~~10 (FB) collected @ 1525

Signature(s): Skip Barton

Tetra Tech NUS

Groundwater Purging and Sampling Log

Date 113000

Project Site Name: NTC Orlando
Project No.: 7457/

Sample Location: ~~B~~ 2273

[ ] Domestic Well Data
[X] Monitoring Well Data
[ ] Other Well Type:

Flow-Thru Cell
Make\Model: HORIBA U-22
Serial Nos.:

Sample ID No.: N2273GDW0513
Sampled By: KJM
C-O-C No.:

PURGING DATA

Casing Size (in.)	Gals. / Liters per ft. of Water	Time Hr:Min	pH pH units	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	ORP mV	DTW ft BTOC	Flow Rate ml/min
0.5	0.01 / 0.038	1325	4.60	.094	25.3	2.7	6.05	-26	12.31	80 mL
1	0.041 / 0.155	1330	4.64	.086	25.1	2.5	11.45	-28	12.31	80 mL
2	**0.163 / 0.617**	1335	4.64	.084	25.0	2.2	11.55	-29	12.31	80 mL
4	0.653 / 2.47	1340	4.64	.083	25.1	2.3	9.03	-30	12.31	80 mL
6	1.469 / 5.56	1345	4.60	.083	25.0	2.5	7.46	-30	12.31	80 mL
8	2.611 / 9.88	1350	4.60	.083	25.1	2.5	6.15	-30	12.31	80 mL
10	4.08 / 15.44	1355	4.60	.083	25.0	2.3	5.59	-30	12.31	80 mL
	[1 gal. = 3.785 L]	1400	4.60	.084	25.0	2.1	5.01	-31	12.31	80 mL
		1405	4.61	.083	25.1	2.2	4.70	-31	12.31	80 mL
PID Reading (ppm): 0		1410	4.60	.084	25.0	2.2	4.30	-32	12.31	80 mL
		1413	4.59	.083	25.0	2.1	4.29	-33	12.31	80 mL
		1416	4.60	.084	25.1	2.5	4.26	-34	12.31	80 mL
Well Casing Diameter: 2"										
Total Well Depth: 32.0										
Static Water Level: 12.31										
Tube Intake Depth: 10.0										
Start Purge (hr): 1323										
End Purge (hr): 1420										
Total Purge Time (min): 57										
Total Vol. Purged: 4560 mL										

WATER QUALITY SAMPLE PARAMETERS

	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	DTW	Flow Rate
Date: 113000	Description	pH units	mS/cm	°C	NTU	mg/L	mV	ft BTOC	ml/min
Time: 1420	Yellow/Clear	4.61	.084	25.1	2.5	4.26	-34	12.31	80 mL

ANALYSES INFORMATION

Analysis		Preservative	Container Requirements			Collected
TCL VOCs	8260B	HCl	(3)	40 ml	glass vials	113000 → 6
SVOCs/PAHs	8270C/8310	None	3 (2)	1-liter	amber glass	113000 → 6
Pesticides	8081A	None	1	1-liter	amber glass	
Herbicides	8151	None	1	1-liter	amber glass	
X-tra Organic	8XXX	None	1 or 2	1-liter	amber glass	
TAL Metals	6000/7000	HNO_3	1	1-liter	HDPE	
TRPH	FL PRO	H_2SO_4	1	1-liter	amber glass	

ADDITIONAL INFORMATION

Comments:

Method:
[X] Peristaltic Pump
[ ] Centrifugal Pump
[ ] Bladder Pump
[ ] Tube Evacuation
[X] Vacuum Jug Assembly
[ ] Bailer

Tubing Type:
[ ] Polyethylene
[X] Teflon
[ ] Teflon-lined Polyethylene

Total 12

QA\QC SAMPLES

MS/MSD:

Duplicate ID No.: N2273D100013

Signature(s): Kevin Murphy

GROUNDWATER PURGING AND SAMPLING LOG

Date Oct 1, 1999

Project Site Name: NTC Orlando
Project No.: CTO 0024

[ ] Domestic Well Data
[X] Monitoring Well Data
[ ] Other Well Type:

Sample ID No.: DW-6
Sample Location: 2273 Bld
Sampled By: RSM
C.O.C. No.:

PURGING DATA

Casing Size (In.)	Gals/Ft. of Water	Time Hr:Min	pH pH units	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	ORP mV	DTW ft BTOC	Flow Rate ml/min
1	0.041	1529	2996	458	29.18	10.97	1.6	961	16.80	100
2	0.163	stop	@	1530	Because DO not correct					
3	0.367	1613	7.62	5980	30.71	6.34	3.24	623	16.43	100
4	0.653	1620	9.05	4710	30.07	9.20	1.80	-9.7	16.43	100
5	1.020	1625	9.55	432.0	30.05	9.63	1.17	-27.1	16.43	100
6	1.469	1630	9.67	426.0	30.20	10.3	0.90	-30.1	16.92	100
8	2.611	1635	9.71	426.0	29.97	10.1	0.75	-32.3	17.40	100
10	4.080	1640	9.74	425.0	29.66	10.3	0.68	-34.2	17.40	100
		1645	9.76	425.0	29.80	10.1	0.64	-35.8	17.40	100
		1650	9.79	425.0	29.96	11.2	0.61	-35.9	17.40	100
		1655	9.84	424.0	29.90	11.7	0.57	-37.8	17.40	100
		1700	9.91	424.0	30.15	12.4	0.56	-39.9	17.40	100
Well Casing Diameter: 2" Dia		1705	10.04	425.0	29.98	13.3	0.50	-47.0	17.40	100
Total Well Depth (TD): 42.13		1710	10.13	426.0	29.21	14.6	0.56	-57.0	17.40	100
Static Water Level (WL): 16.76		1715	10.45	440.0	29.04	15.8	0.55	-71.0	17.40	100
One Casing Volume(gal/L): 5.1		1730	10.58	516.0	29.49	14.2	0.53	-92.0	17.40	100
		1735	10.42	536.0	29.45	13.9	0.50	-93.0	17.40	100
[3.78gals/L]		1740	10.42	539.0	29.40	12.2	0.49	-93.7	17.40	100
Start Purge (hrs): 1511 1525										
End Purge (hrs): 1740										
Total Purge Time (min): 89 min										
Total Vol. Purged (gal/L):										
8900 mL or 8 Lt. + 900 mL										

SAMPLE PARAMETERS

	Color Description	pH pH units	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	ORP mV	DTW ft BTOC	Flow Rate ml/min
Date: 1745									
Time: Oct 1 1999	Clear	10.44	5.18.0	29.42	11.5	0.49	-93.8	17.40	100

SAMPLE COLLECTION INFORMATION

VOC Analysis	Preservative	Container Requirements	Collected
VOC - CNL	HCL	3 - 40 mL	10/1/99
Gross Alpha/Gross Beta/Total Uranium/Radium 226	HNO3 (pH < 2)	1 - 1 gal plastic cubitainer	

ADDITIONAL INFORMATION

OVA Reading (ppm):

Method:
[X] Peristaltic Pump
[ ] Centrifugal Pump
[ ] Bladder Pump
[ ] Tube Evacuation
[ ] Vacuum Jug Assembly
[ ] Bailer

Tubing Type:
[ ] Polyethylene
[X] Teflon
[ ] Teflon-lined Polyethylene

Circle if Applicable:
MS/MSD
Duplicate ID No.:

Signature(s):

Date 11/30/00

Tetra Tech NUS
Groundwater Purging and Sampling Log

Page 1 of 1

Project Site Name: NTC Orlando
Project No.: 7457/

Sample Location: B273 DW-6

[ ] Domestic Well Data

Flow-Thru Cell
Make\Model: HORIBA U-22

Sample ID No.: N273GDW0613

[X] Monitoring Well Data

Serial Nos.: T0042002

Sampled By: C. Morrison

[ ] Other Well Type:

C-O-C No.:

PURGING DATA

Casing Size (in.)	Gals. per ft. of Water / Liters per ft. of Water	Time Hr:Min	pH pH units	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	ORP mV	DTW ft BTOC	Flow Rate ml/min
0.5	0.01 / 0.038	1140	5.86	0.220	27.2	2.18	3.55	-100	18.21	100
1	0.041 / 0.155	1153	5.81	0.222	27.3	2.23	2.78	-106		
2	0.163 / 0.617	1158	5.78	0.222	27.3	2.23	2.64	-107		
4	0.653 / 2.47	1203	5.79	0.222	27.2	2.08	2.47	-106		
6	1.469 / 5.56	1209	5.75	0.224	27.3	2.03	1.92	-111		
8	2.611 / 9.88	1213	5.75	0.225	27.4	1.99	1.89	-112		
10	4.08 / 15.44	1216	5.75	0.225	27.4	1.97	1.83	-113	↓	↓
	[1 gal. = 3.785 L]									

PID Reading (ppm): 0

Well Casing Diameter: 2"
Total Well Depth: 32.0'
Static Water Level: 18.07'
Tube Intake Depth: 29.0'

Start Purge (hr): ~~1124~~ am 1142
End Purge (hr): 1216
Total Purge Time (min):
Total Vol. Purged:

WATER QUALITY SAMPLE PARAMETERS

	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	DTW	Flow Rate
Date: 11/30/00	Description	pH units	mS/cm	°C	NTU	mg/L	mV	ft BTOC	ml/min
Time: 1216	Clear	5.75	0.225	27.4	1.97	1.83	-113	18.21	100

ANALYSES INFORMATION

Analysis		Preservative	Container Requirements			Collected
TCL VOCs	8260B	HCl	3	40 ml	glass vials	3
SVOCs/PAHs	8270C/8310	None	2	1-liter	amber glass	
Pesticides	8081A	None	1	1-liter	amber glass	
Herbicides	8151	None	1	1-liter	amber glass	
X-tra Organic	8XXX	None	1 or 2	1-liter	amber glass	
TAL Metals	6000/7000	HNO_3	1	1-liter	HDPE	
TRPH	FL PRO	H_2SO_4	1	1-liter	amber glass	

ADDITIONAL INFORMATION

Comments:

Method:
- [X] Peristaltic Pump
- [ ] Centrifugal Pump
- [ ] Bladder Pump
- [ ] Tube Evacuation
- [ ] Vacuum Jug Assembly
- [ ] Bailer

Tubing Type:
- [ ] Polyethylene
- [ ] Teflon
- [X] Teflon-lined Polyethylene

Total 3

QA\QC SAMPLES

MS/MSD: N/A

Duplicate ID No.: N/A

Signature(s): Chris Morrison

GROUNDWATER PURGING AND SAMPLING LOG

Date 10/2/99

Project Site Name: NTC Orlando
Project No.: CTO 0024

[ ] Domestic Well Data
[X] Monitoring Well Data
[ ] Other Well Type:

Sample ID No.: DW-7
Sample Location: 2233
Sampled By: CSm
C.O.C. No.:

PURGING DATA

Casing Size (in.)	Gals/Ft. of Water	Time Hr:Min	pH pH units	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	ORP mV	DTW ft BTOC	Flow Rate ml/min
1	0.041	0955	5.03	260.0	27.52	60.0	3.20	59.6	15.26	100
2	**0.163**	1000	4.98	271.0	27.89	24.2	2.32	28.5	15.93	100
3	0.367	1005	4.95	272.0	27.90	12.1	1.98	21.3	15.95	20
4	0.653	1010	4.92	271.0	27.95	8.7	1.90	14.7	15.94	20
5	1.020	1015	4.93	268.0	27.87	3.1	1.35	8.2	15.92	20
6	1.469	1020	4.91	266.0	27.92	7.9	1.84	5.6	15.90	20
8	2.611	1025	4.91	264.0	27.96	7.4	1.84	2.1	15.88	20
10	4.080	1030	4.90	263.0	28.06	9.4	1.87	-0.5	15.89	20
		1035	4.90	262.0	27.23	9.0	1.90	-1.9	15.93	20
		1040	4.90	260.0	28.27	7.9	1.92	-5.5	15.84	20
		1045	4.90	259.0	28.32	8.5	1.94	-6.7	15.82	20
		1050	4.90	258.0	28.40	7.5	1.98	-7.9	15.80	20
Well Casing Diameter: 2" PVC		1055	4.90	259.0	27.35	8.3	2.30	-7.8	15.78	20
Total Well Depth (TD): 45.60		1100	4.90	259.0	28.28	8.5	1.99	-7.3	15.88	20
Static Water Level (WL): 15.37										
One Casing Volume(gal/L): 5.4gl										
[3.78gals/L]										
Start Purge (hrs): 0955										
End Purge (hrs): 1100										
Total Purge Time (min): 65 min										
Total Vol. Purged (gal/L): ~~16 gal~~										
6 Lt.										

SAMPLE PARAMETERS

	Color Description	pH pH units	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	ORP mV	DTW ft BTOC	Flow Rate ml/min
Date: 10/2/99									
Time: 1105	Clear	4.96	259.0	28.50	8.4	1.98	-7.8	15.80	20

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
VOA	HCL	3 - 40 ML Vials	10/2/99
~~Gross Alpha/Gross Beta/Total Uranium/Radium 226~~	HNO3 (pH < 2)	1 - 1 gal plastic cubitainer	

ADDITIONAL INFORMATION

OVA Reading (ppm):

Method:
[X] Peristaltic Pump
[ ] Centrifugal Pump
[ ] Bladder Pump
[ ] Tube Evacuation
[✓] Vacuum Jug Assembly
[ ] Bailer

Tubing Type:
[ ] Polyethylene
[X] Teflon
[ ] Teflon-lined Polyethylene

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Date 11/30/00

Tetra Tech NUS
Groundwater Purging and Sampling Log

Project Site Name: NTC Orlando
Project No.: 7457/

Sample Location: 2273

[ ] Domestic Well Data

Flow-Thru Cell
Make\Model: HORIBA U-22

Sample ID No.: DW7 / NZ2736 ~~D713~~ DW0113

[X] Monitoring Well Data

Serial Nos.: 9279024

Sampled By: KJM

[ ] Other Well Type:

C-O-C No.:

PURGING DATA

Casing Size (in.)	Gals. / Liters per ft. of Water	Time Hr:Min	pH pH units	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	ORP mV	DTW ft BTOC	Flow Rate ml/min
0.5	0.01 / 0.038									
1	0.041 / 0.155									
2	0.163 / 0.617	1009	5.46	.267	23.5	4.4	4.37	174	18.03	100 mL/min
4	0.653 / 2.47	1016	5.46	.262	24.3	4.0	3.95	181	18.75	100
6	1.469 / 5.56	1025	5.45	.255	24.5	2.4	2.83	86	18.50	80 mL
8	2.611 / 9.88	1030	5.39	.252	24.5	2.2	2.97	-7	18.43	80 mL
10	4.08 / 15.44	1037	5.37	249	24.3	2.0	2.52	-18	18.41	80 mL
	[1 gal. = 3.785 L]	1042	5.37	.247	24.6	1.8	2.56	-28	18.40	80 mL

PID Reading (ppm): 0 ppm

Well Casing Diameter: 2" PVC
Total Well Depth: 45.42
Static Water Level: 17.59
Tube Intake Depth: 42.0

Start Purge (hr): 10:05
End Purge (hr): 10:42
Total Purge Time (min): 37 min
Total Vol. Purged: 2.9 Lt
or 2940 mL

WATER QUALITY SAMPLE PARAMETERS

	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	DTW	Flow Rate
Date: 113000	Description	pH units	mS/cm	°C	NTU	mg/L	mV	ft BTOC	ml/min
Time: 1045	Clear	5.37	.247	24.6	1.8	2.56	-28	18.40	80 mL

ANALYSES INFORMATION

Analysis		Preservative	Container Requirements			Collected
TCL VOCs	8260B	HCl	(3)	40 ml	glass vials	113000
SVOCs/PAHs	8270C/8310	None	2	1-liter	amber glass	
Pesticides	8081A	None	1	1-liter	amber glass	
Herbicides	8151	None	1	1-liter	amber glass	
X-tra Organic	8XXX	None	1 or 2	1-liter	amber glass	
TAL Metals	6000/7000	HNO_3	1	1-liter	HDPE	
TRPH	FL PRO	H_2SO_4	1	1-liter	amber glass	

ADDITIONAL INFORMATION

Comments: @ 1017 Slow purge Rate to 80 mL/min Because of H_2O level Steadily Dropping

Method:
[~~4~~] Peristaltic Pump
[ ] Centrifugal Pump
[ ] Bladder Pump
[ ] Tube Evacuation
[ ] Vacuum Jug Assembly
[ ] Bailer

Tubing Type:
[ ] Polyethylene
[ ] Teflon
[ ] Teflon-lined Polyethylene

Total 3

QA\QC SAMPLES

MS/MSD:	Duplicate ID No.:	Signature(s):

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NTC ORLANDO
Project No.:

Sample ID No.: DW-66
Sample Location: 2273 Bldg
Sampled By: KJM
C.O.C. No.:

[] Domestic Well Data
[✓] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Type of Sample:
[✓] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 10-1-99	Color	pH	S.C.	Temp.	Turbidity	DO	~~Salinity~~	Other
Time: 1040	(Visual)	(S.U.)	(mS/cm)	(°C)	(NTU)	(mg/l)	Depth	ORP
Method: TEFLON Bailer	Clear	5.37	141.0	27.67	7.8	2.02	17.52 DTW	-43.8

PURGE DATA:

Date: 10/1/99	~~Time~~ Volume	pH	S.C.	Temp.	Turbidity	DO	~~Salinity~~	Other ORP
Method: Micro-Purge	920	4.99	123.0	26.27	3.9	2.18	17.52	39.3
Monitor Reading (ppm):	0925	4.96	121.0	26.47	4.97	2.15		24.6
Well Casing Diameter & Material Type: 2" PVC	930	5.05	123.0	26.70	3.85	1.98		9.4
	935	5.09	125.0	26.76	2.24	1.95		1.7
Total Well Depth (TD): 46.35	940	5.10	126.0	26.76	1.75	1.97		-3.2
Static Water Level (WL): 16.96	945	5.19	129.0	26.80	1.15	1.91		-14.0
One Casing Volume(gal/L): 5.2	950	5.21	131.0	26.85	1.90	1.89		-21.0
Start Purge (hrs): 0913	955	5.23	132.0	26.95	2.7	1.88		-25.7
End Purge (hrs): 1040	1000	5.24	133.0	27.10	3.4	1.89		-26.9
Total Purge Time (min): 87 min	1005	5.26	134.0	27.15	4.9	1.91		-27.2
Total Vol. Purged (gal/L): 27.4	1010	5.29	137.0	27.03	7.2	1.93	✓	-29.7

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
VOC	HCl	3 x 40 mL Vials	10/01/99
PAH	none		✓

OBSERVATIONS / NOTES:

Circle if Applicable:

MS/MSD | Duplicate ID No.:

Signature(s):

Jean J. Mangelot

Date 11/30/00

Tetra Tech NUS
Groundwater Purging and Sampling Log

Project Site Name: NTC Orlando
Project No.: 7457/

Sample Location: B2273 DW-8

[ ] Domestic Well Data

Flow-Thru Cell
Make\Model: HORIBA U-22

Sample ID No.: N2273GDW0813

[X] Monitoring Well Data

Serial Nos.: T0042002

Sampled By: C. Morrison

[ ] Other Well Type: _____

C-O-C No.: _____

PURGING DATA

Casing Size (in.)	Gals. per ft. of Water / Liters per ft. of Water	Time Hr:Min	pH pH units	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	ORP mV	DTW ft BTOC	Flow Rate ml/min
0.5	0.01 / 0.038	1544	5.09	0.110	25.0	4.51	6.03	193	19.22	100
1	0.041 / 0.155	1549	5.04	0.106	24.6	3.52	5.97	205		
2	0.163 / 0.617	1554	5.03	0.105	24.5	3.08	4.62	213		
4	0.653 / 2.47	1559	5.03	0.104	24.5	2.46	4.26	220		
6	1.469 / 5.56	1604	5.02	0.104	24.5	2.06	4.13	221		
8	2.611 / 9.88	1607	5.02	0.104	24.4	2.01	4.11	222	↓	↓
10	4.08 / 15.44									
	[1 gal. = 3.785 L]									

PID Reading (ppm): 0

Well Casing Diameter: 2"
Total Well Depth: 46.35'
Static Water Level: 19.19
Tube Intake Depth: 43.35'

Start Purge (hr): 1531
End Purge (hr): 1607
Total Purge Time (min):
Total Vol. Purged:

WATER QUALITY SAMPLE PARAMETERS

	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	DTW	Flow Rate
Date: 11/30/00	Description	pH units	mS/cm	°C	NTU	mg/L	mV	ft BTOC	ml/min
Time: 1615	Clear	5.02	0.104	24.4	2.01	4.11	222	19.22	100

ANALYSES INFORMATION

Analysis		Preservative	Container Requirements			Collected
TCL VOCs	8260B	HCl	3	40 ml	glass vials	9
SVOCs (PAHs)	8270C/8310	None	3 ~~25~~	1-liter	amber glass	9
Pesticides	8081A	None	1	1-liter	amber glass	
Herbicides	8151	None	1	1-liter	amber glass	
X-tra Organic	8XXX	None	1 or 2	1-liter	amber glass	
TAL Metals	6000/7000	HNO_3	1	1-liter	HDPE	
TRPH	FL PRO	H_2SO_4	1	1-liter	amber glass	

ADDITIONAL INFORMATION

Comments:

Method:
[X] Peristaltic Pump
[ ] Centrifugal Pump
[ ] Bladder Pump
[ ] Tube Evacuation
[X] Vacuum Jug Assembly
[ ] Bailer

Tubing Type:
[ ] Polyethylene
[ ] Teflon
[X] Teflon-lined Polyethylene

Total 18

QA\QC SAMPLES

MS/MSD:	Duplicate ID No.:
MS/MSD	N/A

Signature(s): Chet Morrison

continuation

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: _____
Project No.: _____

[] Domestic Well Data
[] Monitoring Well Data
[] Other Well Type: _____
[] QA Sample Type: _____

Sample ID No.: DW-68
Sample Location: 2273
Sampled By: _____
C.O.C. No.: _____
Type of Sample:
[] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: / Time: / Method:	Color (Visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	Other
	Clear	5.37	141.0					

PURGE DATA:

Date: / Method: / Monitor Reading (ppm): / Well Casing Diameter & Material Type: / Total Well Depth (TD): / Static Water Level (WL):	~~Time~~ ~~Volume~~	pH	S.C.	Temp.	Turbidity	DO	~~Salinity~~ DTW	~~Other~~ ORP
	1015	5.32	140.0	26.99	7.9	1.93	17.52	35.4
	1020	5.34	141.0	27.27	7.7	1.95		-40.7
	1025	5.36	141.0	27.51	7.9	1.98		-42.7
	1030	5.36	141.0	27.56	7.8	2.00		-43.6
	1035	5.37	141.0	27.57	—	2.02		-43.4
	1040	5.37	141.0	27.67	—	2.02	↓	-43.8
One Casing Volume(gal/L):								
Start Purge (hrs):								
End Purge (hrs):								
Total Purge Time (min):								
Total Vol. Purged (gal/L):								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected

OBSERVATIONS / NOTES:

Circle if Applicable:		Signature(s):
MS/MSD	Duplicate ID No.:	

Date 4/17/00

Groundwater Purging and Sampling Log

B 2273

Tetra Tech NUS

Page 1 of 1

Project Site Name: NTC Orlando
Project No.: 7457/

Sample Location: B2273-DW-09

[ ] Domestic Well Data

[X] Monitoring Well Data

[ ] Other Well Type:

Flow-Thru Cell
Make\Model: HORIBA U-22
Serial Nos.: 927023

Sample ID No.: N2273BDW091.

Sampled By: BA

C-O-C No.:

PURGING DATA

Casing Size (in.)	Gals. / Liters per ft. of Water	Time Hr:Min	pH pH units	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	ORP mV	DTW ft BTOC	Flow Rate ml/min
0.5	0.01 / 0.038	1355	10.40	35.2	23.05	19.0	2.03	-171	18.3	100
1	0.041 / 0.155	1405	10.70	37.7	23.90	17.6	5.34	-190	19.73	100
(2)	0.163 / 0.617	1415	11.10	66.5	23.95	15.0	2.65	-169	19.87	75
4	0.653 / 2.47	1425	11.24	76.8	24.05	12.0	2.72	-169	19.95	75
6	1.469 / 5.56	1435	11.28	83.5	24.11	11.0	2.60	-168	19.95	75
8	2.611 / 9.88	~~1535~~	11.29	85.0	24.49	9.2	3.67	-164	19.80	75
10	4.08 / 15.44									
	[1 gal. = 3.785 L]									

1435

PID Reading (ppm): 0

Well Casing Diameter: 2"
Total Well Depth: 44.95'
Static Water Level: 16.76'
Tube Intake Depth: 42.0'

Start Purge (hr): 1345
End Purge (hr): 1435
Total Purge Time (min): 50
Total Vol. Purged:

WATER QUALITY SAMPLE PARAMETERS

	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	DTW	Flow Rate
Date: 4/17/00	Description	pH units	mS/cm	°C	NTU	mg/L	mV	ft BTOC	ml/min
Time: ~~1540~~ 1440	clear	11.29	85.0	24.49	9.2	3.67	-164	19.80	75

ANALYSES INFORMATION

Analysis		Preservative	Container Requirements			Collected
TCL VOCs	8260B	HCl	3	40 ml	glass vials	✓
SVOCs/PAHs	8270C/8310	None	2	1-liter	amber glass	
Pesticides	8081A	None	1	1-liter	amber glass	
Herbicides	8151	None	1	1-liter	amber glass	
X-tra Organic	8XXX	None	1 or 2	1-liter	amber glass	
TAL Metals	6000/7000	HNO_3	1	1-liter	HDPE	
Antimony	6010B	HNO_3	1	0.5-liter	HDPE	

ADDITIONAL INFORMATION

Comments:

Method:
- [X] Peristaltic Pump
- [ ] Centrifugal Pump
- [ ] Bladder Pump
- [X] Tube Evacuation
- [ ] Vacuum Jug Assembly
- [ ] Bailer

Tubing Type:
- [ ] Polyethylene
- [ ] Teflon
- [X] Teflon-lined Polyethylene

QA\QC SAMPLES

MS/MSD: N/A

Duplicate ID No.: N/A

Signature(s):

W

Groundwater Purging and Sampling Log

Tetra Tech NUS

Date _____ W Page 1 of ___

Project Site Name NTC Orlando
Project No 7457/

Sample Location DW09

Sample ID No B2273-DW09

[ ] Domestic Well Data

[X] Monitoring Well Data

[ ] Other Well Type _____

Flow-Thru Cell
Make/Model HORIBA U-22
Serial Nos _____

Sampled By GB + CW

C-O-C No 60449

PURGING DATA

Casing Size (in.)	Gals. / Liters per Ft. of Water	Time hr Min	pH pH units	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	ORP mV	DTW ft BTOC	Flow Rate ml/min
0.5	0.01 / 0.038	0940	10.64	40.6	26.35	983	2.37	9	17.60	
1	0.041 / 0.155	0950	10.53	40.5	26.27	10.07	1.67	-29	↑	300
2	0.163 / 0.617	0955	10.48	40.5	26.33	9.33	1.59	-30		300
4	0.653 / 2.47	1000	10.29	38.8	26.34	6.31	1.45	-22		300
6	1.469 / 5.56	1004	Turned	pump	down	to 250	mL/min			250
8	2.611 / 9.88	1010	7.10	40.7	26.58	2.66	0.75	-138		
10	4.08 / 15.44	1020	6.97	63.5	26.77	1.80	0.65	-118		
	[1 gal = 3.785 L]	1020	Turned	pump	down	to 200	mL/min			
		1027	6.90	64.6	26.95	0.95	0.55	-110		
PID Reading (ppm).		1033	6.90	64.9	26.96	0.93	0.51	-108		
		1040	6.91	64.5	27.05	0.91	0.49	-108	↓	↓
		1043	END	PURGE						

well Casing Diameter 2"
Total well Depth. 43-60
Static Water Level 17.74
Tube Intake Depth ≈40 ft

Start Purge (hr) 0937
End Purge (hr): 1043
Total Purge Time (min): 66
Total Vol Purged: 5 GALS

WATER QUALITY SAMPLE PARAMETERS

	Color Description	pH pH units	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	ORP mV	DTW ft BTOC	Flow Rate ml/min
Date.									
Time									

ANALYSIS INFORMATION

Analytes		Preservative	Container Requirements			Collected
TCL VOCs	8260B	HCl	3	40 ml	glass vials	
TAL Metals	6000/7000	HNO_3	1	1-liter	HDPE	
Anions/Alkalinity	300.1	Cool to 4C	1	1-liter	HDPE	
Treatability Study	n/a	Cool to 4C	2 gals or 8-liters			

ADDITIONAL INFORMATION

Comments:

Metered:
[ ] Peristaltic Pump
[√] Centrifugal Pump
[ ] Bladder Pump
[ ] Tube Evacuation
[ ] Vacuum Jug Assembly
[ ] Bailer

Tubing Type:
[ ] Polyethylene
[ ] Teflon
[ ] Teflon-lined Polyethylene

QA/QC SAMPLES

MS/MSD:

Duplicate ID No.:

Signature(s).

Date 11/30/00

Tetra Tech NUS
Groundwater Purging and Sampling Log

Page 1 of 1

Project Site Name: NTC Orlando
Project No.: 7457/

Sample Location: B2273 DW-9

[ ] Domestic Well Data

Flow-Thru Cell
Make\Model: HORIBA U-22

Sample ID No.: ~~N2273GDW12~~ N2273GDW091

[X] Monitoring Well Data

Serial Nos.: T0042002

Sampled By: C. Morris

[ ] Other Well Type:

C-O-C No.:

PURGING DATA

Casing Size (in.)	Gals. / Liters per ft. of Water	Time Hr:Min	pH pH units	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	ORP mV	DTW ft BTOC	Flow Rate ml/min
0.5	0.01 / 0.038	1016	5.09	0.139	24.2	1.52	3.00	-57	17.19	100
1	0.041 / 0.155	1021	5.07	0.111	24.2	1.75	2.63	-48		
2	0.163 / 0.617	1026	5.09	0.110	24.2	1.93	2.48	-49		
4	0.653 / 2.47	1031	5.09	0.107	24.2	1.85	2.45	-46		
6	1.469 / 5.56	1036	5.10	0.105	24.0	1.88	2.43	-42		
8	2.611 / 9.88	1041	5.10	0.108	24.3	1.84	2.41	-44		
10	4.08 / 15.44									
	[1 gal. = 3.785 L]									

PID Reading (ppm): 0

Well Casing Diameter: 2"
Total Well Depth: 32.0'
Static Water Level: 16.88'
Tube Intake Depth: 29.0

Start Purge (hr): 1006
End Purge (hr): 1041
Total Purge Time (min): 35
Total Vol. Purged:

WATER QUALITY SAMPLE PARAMETERS

	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	DTW	Flow Rate
Date: 11/30/00	Description	pH units	mS/cm	°C	NTU	mg/L	mV	ft BTOC	ml/min
Time: 1046	Clear	5.10	0.108	24.3	1.84	2.41	-44	17.19	100

ANALYSES INFORMATION

Analysis		Preservative	Container Requirements			Collected
TCL VOCs	8260B	HCl	3	40 ml	glass vials	3
SVOCs/PAHs	8270C/8310	None	2	1-liter	amber glass	
Pesticides	8081A	None	1	1-liter	amber glass	
Herbicides	8151	None	1	1-liter	amber glass	
X-tra Organic	8XXX	None	1 or 2	1-liter	amber glass	
TAL Metals	6000/7000	HNO_3	1	1-liter	HDPE	
TRPH	FL PRO	H_2SO_4	1	1-liter	amber glass	

ADDITIONAL INFORMATION

Comments:

Method:
[X] Peristaltic Pump
[ ] Centrifugal Pump
[ ] Bladder Pump
[ ] Tube Evacuation
[ ] Vacuum Jug Assembly
[ ] Bailer

Tubing Type:
[ ] Polyethylene
[ ] Teflon
[X] Teflon-lined Polyethylene

Total 3

QA\QC SAMPLES

MS/MSD: N/A

Duplicate ID No.: N/A

Signature(s): Chris Morris

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NTC ORLANDO
Project No.:

[ ] Domestic Well Data
[✓] Monitoring Well Data
[ ] Other Well Type:
[ ] QA Sample Type:

Sample ID No.: MW-4
Sample Location: Bldg 2273
Sampled By: KJM
C.O.C. No.:
Type of Sample:
[✓] Low Concentration
[ ] High Concentration

SAMPLING DATA:

Date: 093099	Color (Visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	~~Salinity~~ Depth (%)	Other ORP
Time: 1440								
Method: Teflon	Clear	6.13	345.0	29.48	19.0	3.82	6.99	-116.6

PURGE DATA:

Date: 093099	~~Volume~~ Time	pH	S.C.	Temp.	Turbidity	DO	~~Salinity~~ Depth	Other ORP
Method: Micro Purge	1157	6.26	346.0	28.6	26.4	2.94	6.99	-42.6
Monitor Reading (ppm):	1206	6.25	337.0	29.02	25.0	2.61		-65.5
Well Casing Diameter & Material	1215	6.24	331.0	29.16	24.8	2.52		-71.7
Type: 2" PVC	1223	6.23	341.0	29.14	24.2	2.48		-72.6
Total Well Depth (TD): 15.01	1235	6.21	344.0	29.24	25.2	2.47		-77.5
Static Water Level (WL): 6.99	1250	6.19	346.0	29.13	24.8	2.50		-84.5
One Casing Volume(gal/L): 1.3g	1320	6.14	347.0	29.29	22.4	2.73		-99.7
Start Purge (hrs): 1150	1350	6.14	346.0	29.26	20.1	3.05		-107.5
End Purge (hrs): 1435	1415	6.13	345.0	29.44	20.0	3.52		-113.4
Total Purge Time (min): 165 MIN	1425	6.13	345.0	29.60	19.5	3.68		-114.6
Total Vol. Purged (gal/L): 16.5 G	1435	6.13	345.0	29.48	19.0	3.82		-116.6

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
VOC	HCL	3 x 40 mL VIALS	093099

OBSERVATIONS / NOTES:

Purge Rate Averaged between 80 mL/100 mL p/MIN.
Turbidity @ 19.0 Go ahead & sample as per Mike Cambell

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s): [signature]

Date 10/19/99

GROUNDWATER PURGING AND SAMPLING LOG

Page 1 of 1

Project Site Name: NTC Orlando
Project No.: CTO 0024

[ ] Domestic Well Data
[X] Monitoring Well Data
[ ] Other Well Type:

Sample ID No.: MW-7
Sample Location: 2273 Bldg
Sampled By: KJM
C.O.C. No.:

PURGING DATA

Casing Size (in.)	Gals/Ft. of Water	Time Hr:Min	pH pH units	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	ORP mV	DTW ft BTOC	Flow Rate ml/min
1	0.041	1520	6.57	9310	30.82	4.02	2.96	45.2	11.98	100
2	0.163	1535	6.58	9660	30.87	0.00	2.30	65.3	11.98	100
3	0.367	1540	6.59	9750	30.81	0.00	2.10	66.5	11.98	100
4	0.653	1545	6.59	9710	30.75	0.00	2.01	66.3	11.98	100
5	1.020	1550	6.59	9760	30.71	0.00	1.91	63.4	11.98	100
6	1.469	1555	6.59	9720	30.78	0.00	1.76	63.6	11.98	100
8	2.611	1600	6.59	9730	30.63	0.00	1.82	63.0	11.98	100
10	4.080									

Well Casing Diameter:
Total Well Depth (TD): 15.33
Static Water Level (WL): 11.97
One Casing Volume(gal/L): 1.01
[3.78gals/L]
Start Purge (hrs): 1525
End Purge (hrs): 1610
Total Purge Time (min): 45 min
Total Vol. Purged (gal/L):
~~700 mL~~
4.5 Lt.

SAMPLE PARAMETERS

	Color Description	pH pH units	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	ORP mV	DTW ft BTOC	Flow Rate ml/min
Date: Oct 1 1999									
Time: 1610	Clear	6.59	9720	30.61	0.00	1.31	63.0	11.98	100

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
~~Gross Alpha/Gross Beta/Total Uranium/Radium 226~~	HNO3 (pH < 2)	1 - 1 gal plastic cubitainer	10/1/99
VOC 8260			↓
TPH 8260			
MTBE 8260			

ADDITIONAL INFORMATION

OVA Reading (ppm):

Method:
[X] Peristaltic Pump
[ ] Centrifugal Pump
[ ] Bladder Pump
[ ] Tube Evacuation
[ ] Vacuum Jug Assembly
[ ] Bailer

Tubing Type:
[ ] Polyethylene
[X] Teflon
[ ] Teflon-lined Polyethylene

Circle if Applicable:
MS/MSD | Duplicate ID No.:

Signature(s):
Kevin J. Murphy

Tetra Tech NUS

Groundwater Purging and Sampling Log

Date 11/30/00

Project Site Name: NTC Orlando
Project No.: 7457/

Sample Location: B2273GMW-8

[ ] Domestic Well Data

Flow-Thru Cell
Make\Model: HORIBA U-22

Sample ID No.: N2273GMW0813

[X] Monitoring Well Data

Serial Nos.: T0042002

Sampled By: C. Morrison

[ ] Other Well Type:

C-O-C No.:

PURGING DATA

Casing Size (in.)	Gals. per ft. of Water / Liters per ft. of Water	Time Hr:Min	pH pH units	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	ORP mV	DTW ft BTOC	Flow Rate ml/min
0.5	0.01 / 0.038	1335	6.72	0.690	27.7	14.4	2.33	-64	14.54	100
1	0.041 / 0.155	1340	6.71	0.633	27.3	32 11.4	2.11	-20		
2	0.163 / 0.617	1345	6.72	0.589	27.4	6.70	1.79	-10		
4	0.653 / 2.47	1350	6.72	0.567	27.5	4.13	1.69	-12		
6	1.469 / 5.56	1355	6.72	0.552	27.5	3.45	1.64	-8		
8	2.611 / 9.88	1400	6.71	0.550	27.3	2.42	1.58	-7		
10	4.08 / 15.44	1403	6.71	0.550	27.4	2.41	1.57	-7		
	[1 gal. = 3.785 L]	1406	6.71	0.549	27.3	2.39	1.55	-6		

PID Reading (ppm): 0

Well Casing Diameter: 2"
Total Well Depth: 18.33'
Static Water Level: 14.50'
Tube Intake Depth: 16.33'

Start Purge (hr): 1327
End Purge (hr): 1406
Total Purge Time (min): 39
Total Vol. Purged:

WATER QUALITY SAMPLE PARAMETERS

	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	DTW	Flow Rate
Date: 11/30/00	Description	pH units	mS/cm	°C	NTU	mg/L	mV	ft BTOC	ml/min
Time: 1411	Clear	6.71	0.549	27.3	2.39	1.55	-6	14.54	100

ANALYSES INFORMATION

Analysis		Preservative	Container Requirements			Collected
TCL VOCs	8260B	HCl	3	40 ml	glass vials	3
SVOCs/PAHs	8270C/8310	None	2	1-liter	amber glass	
Pesticides	8081A	None	1	1-liter	amber glass	
Herbicides	8151	None	1	1-liter	amber glass	
X-tra Organic	8XXX	None	1 or 2	1-liter	amber glass	
TAL Metals	6000/7000	HNO_3	1	1-liter	HDPE	
TRPH	FL PRO	H_2SO_4	2	1-liter	amber glass	2

ADDITIONAL INFORMATION

Comments:
Collected 3 40mL vials for MTBE analysis
Collected 2 unpresurved 1-liter amber for TRPH

Method:
[X] Peristaltic Pump
[ ] Centrifugal Pump
[ ] Bladder Pump
[ ] Tube Evacuation
[ ] Vacuum Jug Assembly
[ ] Bailer

Tubing Type:
[ ] Polyethylene
[ ] Teflon
[X] Teflon-lined Polyethylene

Total 3 40
Total 2

QA\QC SAMPLES

MS/MSD:	Duplicate ID No.:
N/A	N/A

Signature(s): Chris Morrison

GROUNDWATER PURGING AND SAMPLING LOG

Date 10/29/09

Page 1 of 1

Project Site Name: NTC Orlando
Project No.: CTO 0024

[ ] Domestic Well Data
[X] Monitoring Well Data
[ ] Other Well Type:

Sample ID No.: MW-9
Sample Location: 2273
Sampled By: KJM
C.O.C. No.:

PURGING DATA

Casing Size (In.)	Gals/Ft. of Water	Time Hr:Min	pH pH units	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	ORP mV	DTW ft BTOC	Flow Rate ml/min
1	0.041	1117	6.20	4130	28.40	5.13	2.46	-32.6	11.13	100
2	0.163	1117	6.47	4510	27.41	4.5	1.75	-37.2	11.13	100
3	0.367	1122	6.52	4610	28.37	3.4	1.65	-35.0	11.13	100
4	0.653	1127	6.55	4650	28.35	3.5	1.56	-35.8	11.13	100
5	1.020	1132	6.55	4670	28.31	3.5	1.51	-39.4	11.13	100
6	1.469	1137	6.56	4700	28.32	3.1	1.48	-41.0	11.13	100
8	2.611	1142	6.56	4670	28.36	2.9	1.47	-41.5	11.13	100
10	4.080	1147	6.52	4700	28.30	2.9	1.46	-41.3	11.13	100

Well Casing Diameter: 4"
Total Well Depth (TD): 17.53
Static Water Level (WL): 11.11
One Casing Volume(gal/L): 0.56(6)
[3.78gals/L]
Start Purge (hrs): 1111
End Purge (hrs): 1147
Total Purge Time (min): 36 min
Total Vol. Purged (gal/L):
~~950 mL~~ a)
3.6 Lt

SAMPLE PARAMETERS

	Color Description	pH pH units	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	ORP mV	DTW ft BTOC	Flow Rate ml/min
Date: 10/29/09									
Time: 1150	Clear	6.61	4720	28.57	2.9	1.45	-41.3	11.13	100

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
~~Gross Alpha/Gross Beta/Total Uranium/Radium 226~~	~~HNO3 (pH < 2)~~	~~3 - 40 mL VOA~~	~~10/29/09~~
Gross Alpha/Gross Beta/Total Uranium/Radium 226	HNO3 (pH < 2)	1 - 1 gal plastic cubitainer	10/29/09

ADDITIONAL INFORMATION

OVA Reading (ppm):

Method:
[ ] Peristaltic Pump
[ ] Centrifugal Pump
[ ] Bladder Pump
[ ] Tube Evacuation
[ ] Vacuum Jug Assembly
[ ] Bailer

Tubing Type:
[ ] Polyethylene
[ ] Teflon
[ ] Teflon-lined Polyethylene

Circle If Applicable:
MS/MSD
Duplicate ID No.:

Signature(s):

APPENDIX G

CHAIN-OF-CUSTODY FORMS

Chain of Custody Record

Universal Engineering

Quanterra

QUA-4124

Client: Tetra Tech NUS	Project Manager	Date: 10/01/99	Chain Of Custody Number: 52892
Address: 800 Oak Ridge Turnpike	Telephone Number (Area Code)/Fax Number	Lab Number	Page 1 of 1
City: Oak Ridge; State: TN; Zip Code: 37830	Site Contact		
Project Name: NTC Orlando - BLDG 2273	Carrier/Waybill Number		
Contract/Purchase Order/Quote No.			

Sample I.D. No. and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No.	Preservative	Condition on Receipt	Analysis: Equal Size
NTC 2273 DW16 0002	9/8/99	0954	SOIL						-
NTC 2273 DW16 0810		1014							
NTC 2273 DW16 1012		1018							
NTC 2273 DW16 1820		1039							
NTC 2273 DW16 2224		1046							
NTC 2273 DW16 2628		1052							
NTC 2273 DW16 2830		1104							
NTC 2273 DW8 3840	9/9/99	1419							
NTC 2273 DW8 4042		1424							

Special Instructions

Possible Hazard Identification

☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal

☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Turn Around Time Required

☐ Normal ☐ Rush

QC Level ☐ I. ☐ II. ☐ III.

Project Specific (Specify)

1. Relinquished By: Skip Barton	Date: 10/1/99	Time:	1. Received By: Universal Engineering	Date: 10/1/99	Time:
2. Relinquished By	Date	Time	2. Received By	Date	Time
3. Relinquished By	Date	Time	3. Received By	Date	Time

Comments

DISTRIBUTION: WHITE - Stays with Sample; CANARY - Returned to Client with Report; PINK - Field Copy

[redacted] [redacted]

Chain of Custody Record

Quanterra

QUA-4124

Client: Tetra Tech NUS, Inc.	Project Manager: Steve McCoy / Mike Campbell	Date: 10/03/99	Chain Of Custody Number: 58190
Address: 800 Oak Ridge Turnpike	Telephone Number (Area Code)/Fax Number: 423-483-9900	Lab Number:	Page 1 of 1
City: Oak Ridge / State: TN / Zip Code: 37830	Site Contact: Slip Barton		
Project Name: NTC Orlando- Bldg 2273	Carrier/Waybill Number: Fed EX 814822916899		
Contract/Purchase Order/Quote No.			

Sample I.D. No. and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No.	Preservative	Condition on Receipt	Analysis: VOC (8260)	Analysis: PAH (8310)
N2273G-DW07I0	10/2/99	1105	water	120ML	VOA	3	HCL		3	
N2273G-MW09I0	↓	1150	↓	120ML	VOA	3	HCL		3	
N2273G-DW05I0		1510		3,120ML	VOA/AMB	3/3	HCL/NONE		3	3
N2273D00110		1525		3,120ML	VOA/AMB	3/3	HCL/NONE		3	3
~~FF~~ N2273TB02 Temp Blank				40ML	VOA	1			1	

Special Instructions

Possible Hazard Identification
☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal
☐ Return To Client ☒ Disposal By Lab ☐ Archive For _____ Months

Turn Around Time Required
☒ Normal ☐ Rush

QC Level
☐ I. ☒ II. ☐ III.

Project Specific (Specify)

	Date	Time		Date	Time
1. Relinquished By: Slip Barton	10/4/99	1600	1. Received By: Fed Ex	10/4/99	1615
2. Relinquished By			2. Received By		
3. Relinquished By			3. Received By		

Comments

DISTRIBUTION: WHITE - Stays with Sample; CANARY - Returned to Client with Report; PINK - Field Copy

Chain of Custody Record

Quanterra

QUA-4124

Client: TETRA TECH NUS INC.	Project Manager: MIKE CAMPBELL	Date: 041700	Chain Of Custody Number: 56131
Address: 800 OAK RIDGE TURNPIKE STE A600	Telephone Number (Area Code)/Fax Number: (865) 483-9900 (865) 483-2014	Lab Number: NUTECHNTON	Page 2 of 2
City: OAK RIDGE / State: TN / Zip Code: 37830	Site Contact:		
Project Name: NTC ORLANDO 7457	Carrier/Waybill Number: FEDEX 815276815396		
Contract/Purchase Order/Quote No.			

Sample I.D. No. and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No.	Preservative	Condition on Receipt	Analysis: HERBICIDES 8151	Analysis: X-TRA ORGANIC 6000/7000 METALS	Analysis: TCLP VOCS 8260B
NTC 086 021 14	041600	1225	GW	3x40ML	P AMBER	3	HNO3/ice		X	X	X
N22736 DW 0911	041700	1440	↓	120ML	40ML VIALS	3	↓ HCL				X

Special Instructions

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☑ Unknown

Sample Disposal
☐ Return To Client ☑ Disposal By Lab ☐ Archive For _____ Months

Turn Around Time Required
☑ Normal ☐ Rush

QC Level
☐ I. ☐ II. ☐ III.

Project Specific (Specify)

	Date	Time		Date	Time
1. Relinquished By	041700	1730	1. Received By: FED EX	041700	
2. Relinquished By			2. Received By		
3. Relinquished By			3. Received By		

Comments

DISTRIBUTION: E - Stays with Sample; CANARY - Returned to Client with Report; PINK - Field Copy

Chain of Custody Record

Quanterra

DUA-4124

Client	Project Manager	Date	Chain Of Custody Number
TETRA TECH	MICHAEL CAMPBELL	6/2/00	60449
Address 800 OAK RIDGE TURNPIKE	**Telephone Number (Area Code)/Fax Number** (865) 220-4714	**Lab Number**	**Page** 1 of 1
City OAK RIDGE **State** TN **Zip Code**	**Site Contact** GARY BRAGANZA		
Project Name NTC ORLANDO	**Carrier/Waybill Number** FED. EX - / 820813871857		
Contract/Purchase Order/Quote No.			

Sample I.D. No. and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No.	Preservative	Condition on Receipt	Analysis: VOC
N2273GDW0962	6/2/00	11:30	GW	120 ml.	40M	3	HCl		X

Special Instructions

Possible Hazard Identification

☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal

☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Turn Around Time Required

☐ Normal ☒ Rush 7-DAY TURNAROUND

QC Level ☐ I. ☐ II. ☐ III.

Project Specific (Specify)

	Date	Time		Date	Time
1. Relinquished By	6/2/00	12:30	1. Received By		
2. Relinquished By			2. Received By	6-3-00	10:00
3. Relinquished By			3. Received By		

Comments

DISTRIBUTION: WHITE - Stays with Sample; CANARY - Returned to Client with Report; PINK - Field Copy

12

ENTL North Canton

Chain of Custody Record

SEVERN TRENT SERVICES — Severn Trent Laboratories, Inc.

STL-4124 (0700)

Client: Tetra Tech NUS	Project Manager: Mike Campbell	Date: 11/30/00	Chain of Custody Number: 030570
Address: 800 Oak Ridge Turnpike A-600	Telephone Number (Area Code)/Fax Number: 865-483-9900 / 865-483-2014	Lab Number:	Page 1 of 1
City: Oak Ridge; State: TN; Zip Code: 37830	Site Contact:	Lab Contact: Dave Hatkin	
Project Name and Location (State): NTC Orlando Orlando, FL	Carrier/Waybill Number: FEDEX / 821147570170		
Contract/Purchase Order/Quote No.: CTO 0024 # 71157			

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Air	Aqueous	Sed	Soil	Containers & Preservatives: Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Analysis: TCL VOCs	MTBE	PAHs	TRPH	Special Instructions/ Conditions of Receipt
N2273TB12-0100	11/30/00	0900		X						1			X				TCL VOC MS8260
N2273FB13		1500		X			2	2		3			X	X	X	X	PAHs LC8310
N2273GMW04 13		1600		X						3			X				TRPH FL-PRO
N2273GMW08 13		1411		X			2	2		6			X	X		X	
N2273GMW09 13		1115		X						3			X				
N2273GDW05 13		1420		X			3			3			X		X		
N2273D100013				X			3			3			X		X		
N2273GDW04 13		1216		X						3			X				
N2273GDW07 13		1045		X						3			X				
N2273GDW08 13 (MS/MSD)		1615		X			9			9			X		X		
N2273GDW09 13		1046		X						3			X				

Possible Hazard Identification: [X] Non-Hazard [ ] Flammable [ ] Skin Irritant [ ] Poison B [ ] Unknown

Sample Disposal: [ ] Return To Client [X] Disposal By Lab [ ] Archive For ____ Months (A fee may be assessed if samples are retained longer than 3 months)

Turn Around Time Required: [ ] 24 Hours [ ] 48 Hours [ ] 7 Days [ ] 14 Days [ ] 21 Days [ ] Other ____

QC Requirements (Specify)

1. Relinquished By: [signature]	Date: 11/30/00	Time: 1750	1. Received By	Date	Time
2. Relinquished By	Date	Time	2. Received By	Date	Time
3. Relinquished By	Date	Time	3. Received By	Date	Time

Comments

DISTRIBUTION: WHITE - Stays with the Sample; CANARY - Returned to Client with Report; PINK - Field Copy

APPENDIX H

GROUNDWATER ANALYTICAL RESULTS

GROUNDWATER ANALYTICAL RESULTS OBTAINED BY ABB-ES

Lab Sample Number:		96120066.4			GB232001			GB232002			GB232001
Site		2273			2273			2273			2273
Locator		006D301/DW3			006GC101			006GC201			006GC301
Collect Date:		09-DEC-96			15-AUG-95			15-AUG-95			15-AUG-95
	VALUE	QUAL	UNITS	VALUE	QUAL	UNITS	VALUE	QUAL	UNITS	VALUE	QUAL UNITS
EDB	ug/l										
Ethylene dibromide		.02	U ug/l		.02	U ug/l		.02	U ug/l		.02 U ug/l
EPA 601/602	ug/l										
Chloromethane		1	U ug/l		1	U ug/l		1	U ug/l		1 U ug/l
Bromomethane		1	U ug/l		1	U ug/l		1	U ug/l		1 U ug/l
Dichlorodifluoromethane		1	U ug/l		1	U ug/l		1	U ug/l		1 U ug/l
Vinyl chloride		1	U ug/l		1	U ug/l		1	U ug/l		1 U ug/l
Chloroethane		1	U ug/l		1	U ug/l		1	U ug/l		1 U ug/l
Methylene chloride		1	U ug/l		5	U ug/l		5	U ug/l		5 U ug/l
Trichlorofluoromethane		1	U ug/l		1	U ug/l		1	U ug/l		1 U ug/l
1,1-Dichloroethene		1	U ug/l		1	U ug/l		1	U ug/l		1 U ug/l
1,1-Dichloroethane		1	U ug/l		1	U ug/l		1	U ug/l		1 U ug/l
trans-1,2-Dichloroethene		1	U ug/l		1	U ug/l		1	U ug/l		1 U ug/l
Chloroform		5.4	ug/l		1	U ug/l		1	U ug/l		1 U ug/l
1,2-Dichloroethane		1	U ug/l		1	U ug/l		1	U ug/l		1 U ug/l
1,1,1-Trichloroethane		1	U ug/l		1	U ug/l		1	U ug/l		1 U ug/l
Carbon tetrachloride		1	U ug/l		1	U ug/l		1	U ug/l		1 U ug/l
Bromodichloromethane		1	U ug/l		1	U ug/l		1	U ug/l		1 U ug/l
1,2-Dichloropropane		1	U ug/l		1	U ug/l		1	U ug/l		1 U ug/l
cis-1,3-Dichloropropene		1	U ug/l		1	U ug/l		1	U ug/l		1 U ug/l
Trichloroethene		1	U ug/l		1	U ug/l		1	U ug/l		1 U ug/l
Dibromochloromethane		1	U ug/l		1	U ug/l		1	U ug/l		1 U ug/l
1,1,2-Trichloroethane		1	U ug/l		1	U ug/l		1	U ug/l		1 U ug/l
trans-1,3-Dichloropropene		1	U ug/l		1	U ug/l		1	U ug/l		1 U ug/l
Bromoform		1	U ug/l		1	U ug/l		1	U ug/l		1 U ug/l
1,1,2,2-Tetrachloroethane		1	U ug/l		1	U ug/l		1	U ug/l		1 U ug/l
Tetrachloroethene		1	U ug/l		1	U ug/l		1	U ug/l		1 U ug/l
Chlorobenzene		2	ug/l		1	U ug/l		1	U ug/l		1 U ug/l
1,3-Dichlorobenzene		1	U ug/l		1	U ug/l		1	U ug/l		1 U ug/l
1,2-Dichlorobenzene		110	ug/l		1	U ug/l		1	U ug/l		1 U ug/l
1,4-Dichlorobenzene		4.9	ug/l		1	U ug/l		1	U ug/l		1 U ug/l
Methyl tert-butyl ether		5	U ug/l		1	U ug/l		1	U ug/l		1 U ug/l
Benzene		1	U ug/l		1	U ug/l		1	U ug/l		1 U ug/l
Toluene		1	U ug/l		1	U ug/l		1	U ug/l		1 U ug/l
Chlorobenzene		2	ug/l		1	U ug/l		1	U ug/l		1 U ug/l
Ethylbenzene		1	U ug/l		1	U ug/l		1	U ug/l		1 U ug/l
Xylenes (total)			ug/l		1	U ug/l		1	U ug/l		1 U ug/l
o-Xylene		1	U ug/l		-	ug/l		-	ug/l		- ug/l
m,p-Xylene		1	U ug/l		-	ug/l		-	ug/l		- ug/l
Bromobenzene		1	U ug/l		-	ug/l		-	ug/l		- ug/l
1,1,1,2-Tetrachloroethane		1	U ug/l		-	ug/l		-	ug/l		- ug/l
1,2,3-Trichloropropane		1	U ug/l		-	ug/l		-	ug/l		- ug/l
LEAD	ug/l										
Lead		15	ug/l	19.5		ug/l	2.7		ug/l		2 U ug/l
PNA COMPDS	ug/l										
Naphthalene		5	U ug/l		2	U ug/l		2	U ug/l		2 U ug/l
2-Methylnaphthalene		5	U ug/l		2	U ug/l		2	U ug/l		2 U ug/l
1-Methylnaphthalene		5	U ug/l		2	U ug/l		2	U ug/l		2 U ug/l

Lab Sample Number:		96120066-4			G8232001			G8232002			G8232003	
Site		2273			2273			2273			2273	
Locator		006D301/DW3			006GC101			006GC201			006GC301	
Collect Date:		09-DEC-96			15-AUG-95			15-AUG-95			15-AUG-95	
	VALUE	QUAL	UNITS	VALUE	QUAL	UNITS	VALUE	QUAL	UNITS	VALUE	QUAL	UNITS
Acenaphthylene		5 U	ug/l		2 U	ug/l		2 U	ug/l		2 U	ug/l
Acenaphthene		5 U	ug/l		2 U	ug/l		2 U	ug/l		2 U	ug/l
Fluorene		5 U	ug/l		2 U	ug/l		2 U	ug/l		2 U	ug/l
Phenanthrene		5 U	ug/l		2 U	ug/l		3 U	ug/l		2 U	ug/l
Anthracene		5 U	ug/l		2 U	ug/l		3 U	ug/l		2 U	ug/l
Fluoranthene		5 U	ug/l		2 U	ug/l		2 U	ug/l		2 U	ug/l
Pyrene		5 U	ug/l		2 U	ug/l		2 U	ug/l		2 U	ug/l
Benzo (a) anthracene		5 U	ug/l		2 U	ug/l		2 U	ug/l		2 U	ug/l
Chrysene		5 U	ug/l		2 U	ug/l		2 U	ug/l		2 U	ug/l
Benzo (b) fluoranthene		5 U	ug/l		2 U	ug/l		2 U	ug/l		2 U	ug/l
Benzo (k) fluoranthene		5 U	ug/l		2 U	ug/l		2 U	ug/l		2 U	ug/l
Benzo (a) pyrene		5 U	ug/l		2 U	ug/l		2 U	ug/l		2 U	ug/l
Indeno (1,2,3-cd) pyrene		5 U	ug/l		2 U	ug/l		2 U	ug/l		2 U	ug/l
Dibenzo (a,h) anthracene		5 U	ug/l		2 U	ug/l		2 U	ug/l		2 U	ug/l
Benzo (g,h,i) perylene		5 U	ug/l		2 U	ug/l		2 U	ug/l		2 U	ug/l
TOTAL PETROLEUM HYDROCARBON mg/l												
Total petroleum hydrocarbon		1 U	mg/l		1 U	mg/l		1 U	mg/l		1 U	mg/l

Lab Sample Number:		G8232004			G8232004RE			96100017-4			97010005-1	
Site		2273			2273			2273			2273	
Locator		006GC401			006GC401RE			006GD101/2273DW1			006GD102/DW-1	
Collect Date:		15-AUG-95			15-AUG-95			01-OCT-96			02-JAN-97	
	VALUE	QUAL	UNITS	VALUE	QUAL	UNITS	VALUE	QUAL	UNITS	VALUE	QUAL	UNITS
EDB	ug/l											
Ethylene dibromide	.02	U	ug/l	-		ug/l	.02	U	ug/l	-		ug/l
EPA 601/602	ug/l											
Chloromethane	1	U	ug/l	-		ug/l	5	U	ug/l	1	U	ug/l
Bromomethane	1	U	ug/l	-		ug/l	5	U	ug/l	1	U	ug/l
Dichlorodifluoromethane	1	U	ug/l	-		ug/l	5	U	ug/l	1	U	ug/l
Vinyl chloride	1	U	ug/l	-		ug/l	5	U	ug/l	1	U	ug/l
Chloroethane	1	U	ug/l	-		ug/l	5	U	ug/l	1	U	ug/l
Methylene chloride	5	U	ug/l	-		ug/l	5	U	ug/l	1	U	ug/l
Trichlorofluoromethane	1	U	ug/l	-		ug/l	5	U	ug/l	1	U	ug/l
1,1-Dichloroethene	1	U	ug/l	-		ug/l	5	U	ug/l	1	U	ug/l
1,1-Dichloroethane	1	U	ug/l	-		ug/l	5	U	ug/l	1	U	ug/l
trans-1,2-Dichloroethene	1	U	ug/l	-		ug/l	5	U	ug/l	1	U	ug/l
Chloroform	1	U	ug/l	-		ug/l	5	U	ug/l	1	U	ug/l
1,2-Dichloroethane	1	U	ug/l	-		ug/l	5	U	ug/l	1	U	ug/l
1,1,1-Trichloroethane	1	U	ug/l	-		ug/l	5	U	ug/l	1	U	ug/l
Carbon tetrachloride	1	U	ug/l	-		ug/l	5	U	ug/l	1	U	ug/l
Bromodichloromethane	1	U	ug/l	-		ug/l	5	U	ug/l	1	U	ug/l
1,2-Dichloropropane	1	U	ug/l	-		ug/l	5	U	ug/l	1	U	ug/l
cis-1,3-Dichloropropene	1	U	ug/l	-		ug/l	5	U	ug/l	1	U	ug/l
Trichloroethene	1	U	ug/l	-		ug/l	5	U	ug/l	1	U	ug/l
Dibromochloromethane	1	U	ug/l	-		ug/l	5	U	ug/l	1	U	ug/l
1,1,2-Trichloroethane	1	U	ug/l	-		ug/l	5	U	ug/l	1	U	ug/l
trans-1,3-Dichloropropene	1	U	ug/l	-		ug/l	5	U	ug/l	1	U	ug/l
Bromoform	1	U	ug/l	-		ug/l	5	U	ug/l	1	U	ug/l
1,1,2,2-Tetrachloroethane	1	U	ug/l	-		ug/l	5	U	ug/l	1	U	ug/l
Tetrachloroethene	1	U	ug/l	-		ug/l	5	U	ug/l	1	U	ug/l
Chlorobenzene	1	U	ug/l	-		ug/l	5	U	ug/l	1	U	ug/l
1,3-Dichlorobenzene	1	U	ug/l	-		ug/l	5	U	ug/l	1	U	ug/l
1,2-Dichlorobenzene	1	U	ug/l	-		ug/l	5	U	ug/l	1	U	ug/l
1,4-Dichlorobenzene	1	U	ug/l	-		ug/l	5	U	ug/l	1	U	ug/l
Methyl tert-butyl ether	1	U	ug/l	-		ug/l	25	U	ug/l	5	U	ug/l
Benzene	1	U	ug/l	-		ug/l	5	U	ug/l	1	U	ug/l
Toluene	1	U	ug/l	-		ug/l	5	U	ug/l	1	U	ug/l
Chlorobenzene	1	U	ug/l	-		ug/l	5	U	ug/l	1	U	ug/l
Ethylbenzene	1	U	ug/l	-		ug/l	236.5		ug/l	11.8		ug/l
Xylenes (total)	1	U	ug/l	-		ug/l	-		ug/l	-		ug/l
o-Xylene	-		ug/l	-		ug/l	314.5		ug/l	36.1		ug/l
m,p-Xylene	-		ug/l	-		ug/l	835		ug/l	74.7		ug/l
Bromobenzene	-		ug/l	-		ug/l	5	U	ug/l	1	U	ug/l

Lab Sample Number:		G8232004			G8232004RE			96100017-4			97010005-1			
Site		2273			2273			2273			2273			
Locator		006GC401			006GC401RE			006GD101/2273DW1			006GD102/DW-1			
Collect Date:		15-AUG-95			15-AUG-95			01-OCT-96			02-JAN-97			
		VALUE	QUAL	UNITS	VALUE	QUAL	UNITS	VALUE	QUAL	UNITS	VALUE	QUAL	UNITS	
1,1,1,2-Tetrachloroethane		-		ug/l	-		ug/l	5	U	ug/l	1	U	ug/l	
1,2,3-Trichloropropane		-		ug/l	-		ug/l	5	U	ug/l	1	U	ug/l	
LEAD	ug/l													
Lead		4.1		ug/l	-		ug/l	3	U	ug/l	-		ug/l	
PNA COMPDS	ug/l													
Naphthalene		2	U	ug/l	2	U	ug/l	5	U	ug/l	-		ug/l	
2-Methylnaphthalene		2	U	ug/l	2	U	ug/l	5	U	ug/l	-		ug/l	
1-Methylnaphthalene		2	U	ug/l	2	U	ug/l	5	U	ug/l	-		ug/l	
Acenaphthylene		2	U	ug/l	2	U	ug/l	5	U	ug/l	-		ug/l	
Acenaphthene		2	U	ug/l	2	U	ug/l	5	U	ug/l	-		ug/l	
Fluorene		2	U	ug/l	2	U	ug/l	5	U	ug/l	-		ug/l	
Phenanthrene		2	U	ug/l	2	U	ug/l	5	U	ug/l	-		ug/l	
Anthracene		2	U	ug/l	2	U	ug/l	5	U	ug/l	-		ug/l	
Fluoranthene		2	U	ug/l	2	U	ug/l	5	U	ug/l	-		ug/l	
Pyrene		2	U	ug/l	2	U	ug/l	5	U	ug/l	-		ug/l	
Benzo (a) anthracene		2	U	ug/l	2	U	ug/l	5	U	ug/l	-		ug/l	
Chrysene		2	U	ug/l	2	U	ug/l	5	U	ug/l	-		ug/l	
Benzo (b) fluoranthene		2	U	ug/l	2	U	ug/l	5	U	ug/l	-		ug/l	
Benzo (k) fluoranthene		2	U	ug/l	2	U	ug/l	5	U	ug/l	-		ug/l	
Benzo (a) pyrene		2	U	ug/l	2	U	ug/l	5	U	ug/l	-		ug/l	
Indeno (1,2,3-cd) pyrene		2	U	ug/l	2	U	ug/l	5	U	ug/l	-		ug/l	
Dibenzo (a,h) anthracene		2	U	ug/l	2	U	ug/l	5	U	ug/l	-		ug/l	
Benzo (g,h,i) perylene		2	U	ug/l	2	U	ug/l	5	U	ug/l	-		ug/l	
TOTAL PETROLEUM HYDROCARBON	mg/l													
Total petroleum hydrocarbon		1	U	mg/l			mg/l	1	U	mg/l	-		mg/l	

Lab Sample Number:	97060163-2			96120066-3			97010005-2			97060163-3	
Site	2273			2273			2273			2273	
Locator	006GD103/2273 DW-1			006GD201/DW2			006GD202/DM-2			006GD203/2273 DW-2	
Collect Date:	24-JUN-97			09-DEC-96			02-JAN-97			24-JUN-97	
	VALUE	QUAL	UNITS	VALUE	QUAL	UNITS	VALUE	QUAL	UNITS	VALUE	QUAL UNITS
EDB	ug/l										
Ethylene dibromide	.02	U	ug/l	.02	U	ug/l			ug/l	.02	U ug/l
EPA 601/602	ug/l										
Chloromethane	1	U	ug/l	1	U	ug/l	1	U	ug/l	1	U ug/l
Bromomethane	1	U	ug/l	1	U	ug/l	1	U	ug/l	1	U ug/l
Dichlorodifluoromethane	1	U	ug/l	1	U	ug/l	1	U	ug/l	1	U ug/l
Vinyl chloride	1	U	ug/l	1	U	ug/l	1	U	ug/l	1	U ug/l
Chloroethane	1	U	ug/l	1	U	ug/l	1	U	ug/l	1	U ug/l
Methylene chloride	1	U	ug/l	1	U	ug/l	1	U	ug/l	1	U ug/l
Trichlorofluoromethane	1	U	ug/l	1	U	ug/l	1	U	ug/l	1	U ug/l
1,1-Dichloroethene	1	U	ug/l	1	U	ug/l	1	U	ug/l	1	U ug/l
1,1-Dichloroethane	1	U	ug/l	1	U	ug/l	1	U	ug/l	1	U ug/l
trans-1,2-Dichloroethene	1	U	ug/l	1	U	ug/l	1	U	ug/l	1	U ug/l
Chloroform	1	U	ug/l	1	U	ug/l	1	U	ug/l	1	U ug/l
1,2-Dichloroethane	1	U	ug/l	1	U	ug/l	1	U	ug/l	1	U ug/l
1,1,1-Trichloroethane	1	U	ug/l	1	U	ug/l	1	U	ug/l	1	U ug/l
Carbon tetrachloride	1	U	ug/l	1	U	ug/l	1	U	ug/l	1	U ug/l
Bromodichloromethane	1	U	ug/l	1	U	ug/l	1	U	ug/l	1	U ug/l
1,2-Dichloropropane	1	U	ug/l	1	U	ug/l	1	U	ug/l	1	U ug/l
cis-1,3-Dichloropropene	1	U	ug/l	1	U	ug/l	1	U	ug/l	1	U ug/l
Trichloroethene	1	U	ug/l	1	U	ug/l	1	U	ug/l	1	U ug/l
Dibromochloromethane	1	U	ug/l	1	U	ug/l	1	U	ug/l	1	U ug/l
1,1,2-Trichloroethane	1	U	ug/l	1	U	ug/l	1	U	ug/l	1	U ug/l
trans-1,3-Dichloropropene	1	U	ug/l	1	U	ug/l	1	U	ug/l	1	U ug/l
Bromoform	1	U	ug/l	1	U	ug/l	1	U	ug/l	1	U ug/l
1,1,2,2-Tetrachloroethane	1	U	ug/l	1	U	ug/l	1	U	ug/l	1	U ug/l
Tetrachloroethene	1	U	ug/l	1	U	ug/l	1	U	ug/l	1	U ug/l
Chlorobenzene	1	U	ug/l	39		ug/l	12.7		ug/l	29.9	ug/l
1,3-Dichlorobenzene	1	U	ug/l	1	U	ug/l	1	U	ug/l	1	U ug/l
1,2-Dichlorobenzene	1	U	ug/l	1	U	ug/l	1	U	ug/l	1	U ug/l
1,4-Dichlorobenzene	1	U	ug/l	1	U	ug/l	1	U	ug/l	1	U ug/l
Methyl tert-butyl ether	5	U	ug/l	5	U	ug/l	5	U	ug/l	5	U ug/l
Benzene	1	U	ug/l	4.8		ug/l	1	U	ug/l	3.3	ug/l
Toluene	1	U	ug/l	1	U	ug/l	1	U	ug/l	1	U ug/l
Chlorobenzene	1	U	ug/l	39		ug/l	12.7		ug/l	29.9	ug/l
Ethylbenzene	5.4		ug/l	7		ug/l	2.1		ug/l	4	ug/l
Xylenes (total)	-		ug/l	-		ug/l	-		ug/l	-	ug/l
o-Xylene	130		ug/l	8.6		ug/l	3.5		ug/l	17.2	ug/l
m,p-Xylene	120		ug/l	16.3		ug/l	8		ug/l	28.8	ug/l
Bromobenzene	1	U	ug/l	1	U	ug/l	1	U	ug/l	1	U ug/l

07/29/97 BUILDING 2273 07:16:00
MAIN BASE, NTC ORLANDO, FLORIDA

Lab Sample Number:		97010005-4		97060163-4		97060163-5		97060163-6
Site:		2273		2273		2273		2273
Locator:		006GD302/DW-3		006GD303/2273 DW-3		006GD401/2273 DW-4		006GD501/2273 DW-5
Collect Date:		02-JAN-97		24-JUN-97		24-JUN-97		24-JUN-97
	VALUE QUAL UNITS		VALUE QUAL UNITS		VALUE QUAL UNITS		VALUE QUAL UNITS	
EDB	ug/l							
Ethylene dibromide	-	ug/l	.02 U	ug/l	.02 U	ug/l	.02 U	ug/l
EPA 601/602	ug/l							
Chloromethane	1 U	ug/l	1 U	ug/l	1 U	ug/l	1 U	ug/l
Bromomethane	1 U	ug/l	1 U	ug/l	1 U	ug/l	1 U	ug/l
Dichlorodifluoromethane	1 U	ug/l	1 U	ug/l	1 U	ug/l	1 U	ug/l
Vinyl chloride	1 U	ug/l	1 U	ug/l	1 U	ug/l	1 U	ug/l
Chloroethane	1 U	ug/l	1 U	ug/l	1 U	ug/l	1 U	ug/l
Methylene chloride	1 U	ug/l	1 U	ug/l	1 U	ug/l	1 U	ug/l
Trichlorofluoromethane	1 U	ug/l	1 U	ug/l	1 U	ug/l	1 U	ug/l
1,1-Dichloroethene	1 U	ug/l	1 U	ug/l	1 U	ug/l	1 U	ug/l
1,1-Dichloroethane	1 U	ug/l	1 U	ug/l	1 U	ug/l	1 U	ug/l
trans-1,2-Dichloroethene	1 U	ug/l	1 U	ug/l	1 U	ug/l	1 U	ug/l
Chloroform	1 U	ug/l	1 U	ug/l	1 U	ug/l	1 U	ug/l
1,2-Dichloroethane	1 U	ug/l	1 U	ug/l	1 U	ug/l	1 U	ug/l
1,1,1-Trichloroethane	1 U	ug/l	1 U	ug/l	1 U	ug/l	1 U	ug/l
Carbon tetrachloride	1 U	ug/l	1 U	ug/l	1 U	ug/l	1 U	ug/l
Bromodichloromethane	1 U	ug/l	1 U	ug/l	1 U	ug/l	1 U	ug/l
1,2-Dichloropropane	1 U	ug/l	1 U	ug/l	1 U	ug/l	1 U	ug/l
cis-1,3-Dichloropropene	1 U	ug/l	1 U	ug/l	1 U	ug/l	1 U	ug/l
Trichloroethene	1 U	ug/l	1 U	ug/l	1 U	ug/l	1 U	ug/l
Dibromochloromethane	1 U	ug/l	1 U	ug/l	1 U	ug/l	1 U	ug/l
1,1,2-Trichloroethane	1 U	ug/l	1 U	ug/l	1 U	ug/l	1 U	ug/l
trans-1,3-Dichloropropene	1 U	ug/l	1 U	ug/l	1 U	ug/l	1 U	ug/l
Bromoform	1 U	ug/l	1 U	ug/l	1 U	ug/l	1 U	ug/l
1,1,2,2-Tetrachloroethane	1 U	ug/l	1 U	ug/l	1 U	ug/l	1 U	ug/l
Tetrachloroethene	1 U	ug/l	1 U	ug/l	1 U	ug/l	1 U	ug/l
Chlorobenzene	1 U	ug/l	1 U	ug/l	1 U	ug/l	1 U	ug/l
1,3-Dichlorobenzene	1 U	ug/l	1 U	ug/l	1 U	ug/l	1 U	ug/l
1,2-Dichlorobenzene	1 U	ug/l	42.8	ug/l	1 U	ug/l	1 U	ug/l
1,4-Dichlorobenzene	1 U	ug/l	1 U	ug/l	1 U	ug/l	1 U	ug/l
Methyl tert-butyl ether	5 U	ug/l	5 U	ug/l	5 U	ug/l	5 U	ug/l
Benzene	1 U	ug/l	1 U	ug/l	1 U	ug/l	1 U	ug/l
Toluene	1 U	ug/l	1 U	ug/l	1 U	ug/l	1 U	ug/l
Chlorobenzene	1 U	ug/l	1 U	ug/l	1 U	ug/l	1 U	ug/l
Ethylbenzene	1 U	ug/l	1 U	ug/l	3.7	ug/l	1 U	ug/l
Xylenes (total)	-	ug/l	-	ug/l	-	ug/l	-	ug/l
o-Xylene	1 U	ug/l	1 U	ug/l	3.9	ug/l	1 U	ug/l
m,p-Xylene	1 U	ug/l	1 U	ug/l	8.1	ug/l	1 U	ug/l
Bromobenzene	1 U	ug/l	1 U	ug/l	1 U	ug/l	1 U	ug/l

		97060163-4	97060163-5	97060163-6
Lab Sample Number:		9		
Site		2273	2273	2273
Locator		00	006GD303/2273 DW-3	006GD401/2273 DW-4	006GD501/2273 DW-5
Collect Date:			24-JUN-97	24-JUN-97	24-JUN-97
	VALUE	VALUE QUAL UNITS	VALUE QUAL UNITS	VALUE QUAL UNITS
1,1,1,2-Tetrachloroethane	1	1 U ug/l	1 U ug/l	1 U ug/l
1,2,3-Trichloropropane	1	1 U ug/l	1 U ug/l	1 U ug/l
LEAD ug/l				
Lead		3 U ug/l	3 U ug/l	3 U ug/l
PNA COMPDS ug/l				
Naphthalene		5 U ug/l	5 U ug/l	8 ug/l
2-Methylnaphthalene		5 U ug/l	5 U ug/l	22 ug/l
1-Methylnaphthalene		5 U ug/l	5 U ug/l	16 ug/l
Acenaphthylene		5 U ug/l	5 U ug/l	5 U ug/l
Acenaphthene		5 U ug/l	5 U ug/l	5 U ug/l
Fluorene		5 U ug/l	5 U ug/l	5 U ug/l
Phenanthrene		5 U ug/l	5 U ug/l	5 U ug/l
Anthracene		5 U ug/l	5 U ug/l	5 U ug/l
Fluoranthene		5 U ug/l	5 U ug/l	5 U ug/l
Pyrene		5 U ug/l	5 U ug/l	5 U ug/l
Benzo (a) anthracene		5 U ug/l	5 U ug/l	5 U ug/l
Chrysene		5 U ug/l	5 U ug/l	5 U ug/l
Benzo (b) fluoranthene		5 U ug/l	5 U ug/l	5 U ug/l
Benzo (k) fluoranthene		5 U ug/l	5 U ug/l	5 U ug/l
Benzo (a) pyrene		5 U ug/l	5 U ug/l	5 U ug/l
Indeno (1,2,3-cd) pyrene		5 U ug/l	5 U ug/l	5 U ug/l
Dibenzo (a,h) anthracene		5 U ug/l	5 U ug/l	5 U ug/l
Benzo (g,h,i) perylene		5 U ug/l	5 U ug/l	5 U ug/l
TOTAL PETROLEUM HYDROCARBON mg/l				
Total petroleum hydrocarbon		1 U mg/l	1 U mg/l	1 U mg/l

Lab Sample Number:		MB473001		MB473002		MB473003		96100017-2	
Site		2273		2273		2273		2273	
Locator		006GM101		006GM201		006GM301		006GM401/2273MW4	
Collect Date:		25-JUL-96		25-JUL-96		25-JUL-96		01-OCT-96	
	VALUE	QUAL UNITS	VALUE	QUAL UNITS	VALUE	QUAL UNITS	VALUE	QUAL UNITS	
EDB	ug/l								
Ethylene dibromide	.02	U ug/l	.02	U ug/l	.02	U ug/l	.02	U	ug/l
EPA 601/602	ug/l								
Chloromethane	1	U ug/l	1	U ug/l	1	U ug/l	1	U	ug/l
Bromomethane	1	U ug/l	1	U ug/l	1	U ug/l	1	U	ug/l
Dichlorodifluoromethane	1	U ug/l	1	U ug/l	1	U ug/l	1	U	ug/l
Vinyl chloride	1	U ug/l	1	U ug/l	1	U ug/l	1	U	ug/l
Chloroethane	1	U ug/l	1	U ug/l	1	U ug/l	1	U	ug/l
Methylene chloride	5	U ug/l	5	U ug/l	5	U ug/l	1	U	ug/l
Trichlorofluoromethane	1	U ug/l	1	U ug/l	1	U ug/l	1	U	ug/l
1,1-Dichloroethene	1	U ug/l	1	U ug/l	1	U ug/l	1	U	ug/l
1,1-Dichloroethane	1	U ug/l	1	U ug/l	1	U ug/l	1	U	ug/l
trans-1,2-Dichloroethene	1	U ug/l	1	U ug/l	1	U ug/l	1	U	ug/l
Chloroform	1	U ug/l	1	U ug/l	1	U ug/l	1	U	ug/l
1,2-Dichloroethane	1	U ug/l	1	U ug/l	1	U ug/l	1	U	ug/l
1,1,1-Trichloroethane	1	U ug/l	1	U ug/l	1	U ug/l	1	U	ug/l
Carbon tetrachloride	1	U ug/l	1	U ug/l	1	U ug/l	1	U	ug/l
Bromodichloromethane	1	U ug/l	1	U ug/l	1	U ug/l	1	U	ug/l
1,2-Dichloropropane	1	U ug/l	1	U ug/l	1	U ug/l	1	U	ug/l
cis-1,3-Dichloropropene	1	U ug/l	1	U ug/l	1	U ug/l	1	U	ug/l
Trichloroethene	1	U ug/l	1	U ug/l	1	U ug/l	1	U	ug/l
Dibromochloromethane	1	U ug/l	1	U ug/l	1	U ug/l	1	U	ug/l
1,1,2-Trichloroethane	1	U ug/l	1	U ug/l	1	U ug/l	1	U	ug/l
trans-1,3-Dichloropropene	1	U ug/l	1	U ug/l	1	U ug/l	1	U	ug/l
Bromoform	1	U ug/l	1	U ug/l	1	U ug/l	1	U	ug/l
1,1,2,2-Tetrachloroethane	1	U ug/l	1	U ug/l	1	U ug/l	1	U	ug/l
Tetrachloroethene	1	U ug/l	1	U ug/l	1	U ug/l	1	U	ug/l
Chlorobenzene	1	U ug/l	1	U ug/l	1	U ug/l	22.9		ug/l
1,3-Dichlorobenzene	1	U ug/l	1	U ug/l	1	U ug/l	1	U	ug/l
1,2-Dichlorobenzene	1	U ug/l	1	U ug/l	1	U ug/l	1	U	ug/l
1,4-Dichlorobenzene	1	U ug/l	1	U ug/l	1	U ug/l	1	U	ug/l
Methyl tert-butyl ether	1	U ug/l	1	U ug/l	1	U ug/l	5	U	ug/l
Benzene	1	U ug/l	1	U ug/l	1	U ug/l	3.2		ug/l
Toluene	1	U ug/l	1	U ug/l	1	U ug/l	1	U	ug/l
Chlorobenzene	1	U ug/l	1	U ug/l	1	U ug/l	22.9		ug/l
Ethylbenzene	27	ug/l	1	U ug/l	1	U ug/l	1	U	ug/l
Xylenes (total)	-	ug/l	-	ug/l	-	ug/l	-		ug/l
o-Xylene	4.6	ug/l	1	U ug/l	1	U ug/l	1	U	ug/l
m,p-Xylene	26	ug/l	2	U ug/l	2	U ug/l	1	U	ug/l
Bromobenzene	-	ug/l	-	ug/l	-	ug/l	1	U	ug/l

Lab Sample Number:		MB473001		MB473002		MB473003		96100017-2	
Site		2273		2273		2273		2273	
Locator		006GM101		006GM201		006GM301		006GM401/2273MW4	
Collect Date:		25-JUL-96		25-JUL-96		25-JUL-96		01-OCT-96	
		VALUE QUAL UNITS		VALUE QUAL UNITS		VALUE QUAL UNITS		VALUE QUAL UNITS	
1,1,1,2-Tetrachloroethane		-	ug/l		ug/l		ug/l	1 U	ug/l
1,2,3-Trichloropropane		-	ug/l		ug/l		ug/l	1 U	ug/l
LEAD	ug/l								
Lead		4.8	ug/l	3.5	ug/l	6.3	ug/l	3 U	ug/l
PNA COMPDS	ug/l								
Naphthalene		38 U	ug/l	2 U	ug/l	2 U	ug/l	5 U	ug/l
2-Methylnaphthalene		38 U	ug/l	2 U	ug/l	2 U	ug/l	5 U	ug/l
1-Methylnaphthalene		38 U	ug/l	2 U	ug/l	2 U	ug/l	5 U	ug/l
Acenaphthylene		38 U	ug/l	2 U	ug/l	2 U	ug/l	5 U	ug/l
Acenaphthene		38 U	ug/l	2 U	ug/l	2 U	ug/l	5 U	ug/l
Fluorene		38 U	ug/l	2 U	ug/l	2 U	ug/l	5 U	ug/l
Phenanthrene		38 U	ug/l	2 U	ug/l	2 U	ug/l	5 U	ug/l
Anthracene		38 U	ug/l	2 U	ug/l	2 U	ug/l	5 U	ug/l
Fluoranthene		38 U	ug/l	2 U	ug/l	2 U	ug/l	5 U	ug/l
Pyrene		38 U	ug/l	2 U	ug/l	2 U	ug/l	5 U	ug/l
Benzo (a) anthracene		38 U	ug/l	2 U	ug/l	2 U	ug/l	5 U	ug/l
Chrysene		38 U	ug/l	2 U	ug/l	2 U	ug/l	5 U	ug/l
Benzo (b) fluoranthene		38 U	ug/l	2 U	ug/l	2 U	ug/l	5 U	ug/l
Benzo (k) fluoranthene		38 U	ug/l	2 U	ug/l	2 U	ug/l	5 U	ug/l
Benzo (a) pyrene		38 U	ug/l	2 U	ug/l	2 U	ug/l	5 U	ug/l
Indeno (1,2,3-cd) pyrene		38 U	ug/l	2 U	ug/l	2 U	ug/l	5 U	ug/l
Dibenzo (a,h) anthracene		38 U	ug/l	2 U	ug/l	2 U	ug/l	5 U	ug/l
Benzo (g,h,i) perylene		38 U	ug/l	2 U	ug/l	2 U	ug/l	5 U	ug/l
TOTAL PETROLEUM HYDROCARBON	mg/l								
Total petroleum hydrocarbon		5.05	mg/l	.19	mg/l	.14	mg/l	3.7	mg/l

Lab Sample Number:		96100017-3			96120066-1			96120066-2			MA311004
Site		2273			2273			2273			2273
Locator		006GM501/2273MW5			006GM601/MW6			006GM701/MW7			006GT101/2273 TW-1
Collect Date:		01-OCT-96			09-DEC-96			09-DEC-96			21-FEB-96
	VALUE	QUAL	UNITS	VALUE	QUAL	UNITS	VALUE	QUAL	UNITS	VALUE	QUAL UNITS
EDB	ug/l										
Ethylene dibromide	.02	U	ug/l	.02	U	ug/l	.02	U	ug/l	-	ug/l
EPA 601/602	ug/l										
Chloromethane	1	U	ug/l	1	U	ug/l	1	U	ug/l	-	ug/l
Bromomethane	1	U	ug/l	1	U	ug/l	1	U	ug/l	-	ug/l
Dichlorodifluoromethane	1	U	ug/l	1	U	ug/l	1	U	ug/l	-	ug/l
Vinyl chloride	1	U	ug/l	1	U	ug/l	1	U	ug/l	-	ug/l
Chloroethane	1	U	ug/l	1	U	ug/l	1	U	ug/l	-	ug/l
Methylene chloride	1	U	ug/l	1	U	ug/l	1	U	ug/l	-	ug/l
Trichlorofluoromethane	1	U	ug/l	1	U	ug/l	1	U	ug/l	-	ug/l
1,1-Dichloroethene	1	U	ug/l	1	U	ug/l	1	U	ug/l	-	ug/l
1,1-Dichloroethane	1	U	ug/l	1	U	ug/l	1	U	ug/l	-	ug/l
trans-1,2-Dichloroethene	1	U	ug/l	1	U	ug/l	1	U	ug/l	-	ug/l
Chloroform	1	U	ug/l	1	U	ug/l	1	U	ug/l	-	ug/l
1,2-Dichloroethane	1	U	ug/l	1	U	ug/l	1	U	ug/l	-	ug/l
1,1,1-Trichloroethane	1	U	ug/l	1	U	ug/l	1	U	ug/l	-	ug/l
Carbon tetrachloride	1	U	ug/l	1	U	ug/l	1	U	ug/l	-	ug/l
Bromodichloromethane	1	U	ug/l	1	U	ug/l	1	U	ug/l	-	ug/l
1,2-Dichloropropane	1	U	ug/l	1	U	ug/l	1	U	ug/l	-	ug/l
cis-1,3-Dichloropropene	1	U	ug/l	1	U	ug/l	1	U	ug/l	-	ug/l
Trichloroethene	1	U	ug/l	1	U	ug/l	1	U	ug/l	-	ug/l
Dibromochloromethane	1	U	ug/l	1	U	ug/l	1	U	ug/l	-	ug/l
1,1,2-Trichloroethane	1	U	ug/l	1	U	ug/l	1	U	ug/l	-	ug/l
trans-1,3-Dichloropropene	1	U	ug/l	1	U	ug/l	1	U	ug/l	-	ug/l
Bromoform	1	U	ug/l	1	U	ug/l	1	U	ug/l	-	ug/l
1,1,2,2-Tetrachloroethane	1	U	ug/l	1	U	ug/l	1	U	ug/l	-	ug/l
Tetrachloroethene	1	U	ug/l	1	U	ug/l	1	U	ug/l	-	ug/l
Chlorobenzene	1	U	ug/l	3.7		ug/l	1	U	ug/l	1	U ug/l
1,3-Dichlorobenzene	1	U	ug/l	1	U	ug/l	1	U	ug/l	1	U ug/l
1,2-Dichlorobenzene	1	U	ug/l	1	U	ug/l	1	U	ug/l	1	U ug/l
1,4-Dichlorobenzene	1	U	ug/l	1	U	ug/l	1	U	ug/l	1	U ug/l
Methyl tert-butyl ether	5	U	ug/l	5	U	ug/l	5	U	ug/l	1	U ug/l
Benzene	1	U	ug/l	1	U	ug/l	1	U	ug/l	1	U ug/l
Toluene	1	U	ug/l	1	U	ug/l	1	U	ug/l	1	U ug/l
Chlorobenzene	1	U	ug/l	3.7		ug/l	1	U	ug/l	1	U ug/l
Ethylbenzene	1	U	ug/l	1	U	ug/l	1	U	ug/l	30	ug/l
Xylenes (total)	-		ug/l			ug/l	-		ug/l	470	E ug/l
o-Xylene	1	U	ug/l	1	U	ug/l	1	U	ug/l	-	ug/l
m,p-Xylene	1	U	ug/l	1	U	ug/l	1	U	ug/l	-	ug/l
Bromobenzene	1	U	ug/l	1	U	ug/l	1	U	ug/l	-	ug/l

		Lab Sample Number:	96100017-3			96120066-1			96120066-2			MA311004	
		Site	2273			2273			2273			2273	
		Locator	006GM501/ 2273MW5			006GM601/MW6			006GM701/MW7			006GT101/2273 TW-1	
		Collect Date:	01-OCT-96			09-DEC-96			09-DEC-96			21-FEB-96	
			VALUE	QUAL	UNITS	VALUE	QUAL	UNITS	VALUE	QUAL	UNITS	VALUE	QUAL UNITS
1,1,1,2-Tetrachloroethane			1	U	ug/l	1	U	ug/l	1	U	ug/l	-	ug/l
1,2,3-Trichloropropane			1	U	ug/l	1	U	ug/l	1	U	ug/l	-	ug/l
LEAD	ug/l												
Lead			3	U	ug/l	8		ug/l	5		ug/l	-	ug/l
PNA COMPDS	ug/l												
Naphthalene			5	U	ug/l	5	U	ug/l	5	U	ug/l	45	U ug/l
2-Methylnaphthalene			5	U	ug/l	5	U	ug/l	8		ug/l	45	U ug/l
1-Methylnaphthalene			5	U	ug/l	5	U	ug/l	6		ug/l	45	U ug/l
Acenaphthylene			5	U	ug/l	5	U	ug/l	5	U	ug/l	45	U ug/l
Acenaphthene			5	U	ug/l	5	U	ug/l	5	U	ug/l	45	U ug/l
Fluorene			5	U	ug/l	5	U	ug/l	5	U	ug/l	45	U ug/l
Phenanthrene			5	U	ug/l	5	U	ug/l	5	U	ug/l	45	U ug/l
Anthracene			5	U	ug/l	5	U	ug/l	5	U	ug/l	45	U ug/l
Fluoranthene			5	U	ug/l	5	U	ug/l	5	U	ug/l	45	U ug/l
Pyrene			5	U	ug/l	5	U	ug/l	5	U	ug/l	45	U ug/l
Benzo (a) anthracene			5	U	ug/l	5	U	ug/l	5	U	ug/l	45	U ug/l
Chrysene			5	U	ug/l	5	U	ug/l	5	U	ug/l	45	U ug/l
Benzo (b) fluoranthene			5	U	ug/l	5	U	ug/l	5	U	ug/l	45	U ug/l
Benzo (k) fluoranthene			5	U	ug/l	5	U	ug/l	5	U	ug/l	45	U ug/l
Benzo (a) pyrene			5	U	ug/l	5	U	ug/l	5	U	ug/l	45	U ug/l
Indeno (1,2,3-cd) pyrene			5	U	ug/l	5	U	ug/l	5	U	ug/l	45	U ug/l
Dibenzo (a,h) anthracene			5	U	ug/l	5	U	ug/l	5	U	ug/l	45	U ug/l
Benzo (g,h,i) perylene			5	U	ug/l	5	U	ug/l	5	U	ug/l	45	U ug/l
TOTAL PETROLEUM HYDROCARBON	mg/l												
Total petroleum hydrocarbon			1	U	mg/l	1.5		mg/l	3.6		mg/l	-	mg/l

Lab Sample Number:		MA311004DL			96100017-1			96120066-5			97060163-1	
Site		2273			2273			2273			2273	
Locator		006GT101/2273 TW 1DL			006RB101/RB-1			006RB201/RB2			006RB301/2273 RB-3	
Collect Date:		21-FEB-96			01-OCT-96			09-DEC-96			24-JUN-97	
	VALUE	QUAL	UNITS	VALUE	QUAL	UNITS	VALUE	QUAL	UNITS	VALUE	QUAL	UNITS
EDB	ug/l											
Ethylene dibromide	-		ug/l	.02	U	ug/l	.02	U	ug/l	.02	U	ug/l
EPA 601/602	ug/l											
Chloromethane	-		ug/l	1	U	ug/l	1	U	ug/l	1	U	ug/l
Bromomethane	-		ug/l	1	U	ug/l	1	U	ug/l	1	U	ug/l
Dichlorodifluoromethane	-		ug/l	1	U	ug/l	1	U	ug/l	1	U	ug/l
Vinyl chloride	-		ug/l	1	U	ug/l	1	U	ug/l	1	U	ug/l
Chloroethane	-		ug/l	1	U	ug/l	1	U	ug/l	1	U	ug/l
Methylene chloride	-		ug/l	1	U	ug/l	1	U	ug/l	1	U	ug/l
Trichlorofluoromethane	-		ug/l	1	U	ug/l	1	U	ug/l	1	U	ug/l
1,1-Dichloroethene	-		ug/l	1	U	ug/l	1	U	ug/l	1	U	ug/l
1,1-Dichloroethane	-		ug/l	1	U	ug/l	1	U	ug/l	1	U	ug/l
trans-1,2-Dichloroethene	-		ug/l	1	U	ug/l	1	U	ug/l	1	U	ug/l
Chloroform	-		ug/l	1	U	ug/l	1	U	ug/l	1	U	ug/l
1,2-Dichloroethane	-		ug/l	1	U	ug/l	1	U	ug/l	1	U	ug/l
1,1,1-Trichloroethane	-		ug/l	1	U	ug/l	1	U	ug/l	1	U	ug/l
Carbon tetrachloride	-		ug/l	1	U	ug/l	1	U	ug/l	1	U	ug/l
Bromodichloromethane	-		ug/l	1	U	ug/l	1	U	ug/l	1	U	ug/l
1,2-Dichloropropane	-		ug/l	1	U	ug/l	1	U	ug/l	1	U	ug/l
cis-1,3-Dichloropropene	-		ug/l	-		ug/l	1	U	ug/l	1	U	ug/l
Trichloroethene	-		ug/l	1	U	ug/l	1	U	ug/l	1	U	ug/l
Dibromochloromethane	-		ug/l	1	U	ug/l	1	U	ug/l	1	U	ug/l
1,1,2-Trichloroethane	-		ug/l	1	U	ug/l	1	U	ug/l	1	U	ug/l
trans-1,3-Dichloropropene	-		ug/l	1	U	ug/l	1	U	ug/l	1	U	ug/l
Bromoform	-		ug/l	1	U	ug/l	1	U	ug/l	1	U	ug/l
1,1,2,2-Tetrachloroethane	-		ug/l	1	U	ug/l	1	U	ug/l	1	U	ug/l
Tetrachloroethene	-		ug/l	1	U	ug/l	1	U	ug/l	1	U	ug/l
Chlorobenzene	5	U	ug/l	1	U	ug/l	1	U	ug/l	1	U	ug/l
1,3-Dichlorobenzene	5	U	ug/l	1	U	ug/l	1	U	ug/l	1	U	ug/l
1,2-Dichlorobenzene	5	U	ug/l	1	U	ug/l	1	U	ug/l	1	U	ug/l
1,4-Dichlorobenzene	5	U	ug/l	1	U	ug/l	1	U	ug/l	1	U	ug/l
Methyl tert-butyl ether	5	U	ug/l	5	U	ug/l	5	U	ug/l	5	U	ug/l
Benzene	5	U	ug/l	1	U	ug/l	1	U	ug/l	1	U	ug/l
Toluene	5	U	ug/l	1	U	ug/l	1	U	ug/l	1	U	ug/l
Chlorobenzene	5	U	ug/l	1	U	ug/l	1	U	ug/l	1	U	ug/l
Ethylbenzene	24		ug/l	1	U	ug/l	1	U	ug/l	1	U	ug/l
Xylenes (total)	500	D	ug/l	-		ug/l	-		ug/l	-		ug/l
o-Xylene	-		ug/l	1	U	ug/l	1	U	ug/l	1	U	ug/l
m,p-Xylene	-		ug/l	1	U	ug/l	1	U	ug/l	1	U	ug/l
Bromobenzene	-		ug/l	1	U	ug/l	1	U	ug/l	1	U	ug/l

Lab Sample Number:		MA311004DL			96100017 1			96120066-5			97060163-1		
Site		2273			2273			2273			2273		
Locator		006GT101/2273 TW-1DL			006RB101/RB-1			006RB201/RB2			006RB301/2273 RB-3		
Collect Date:		21-FEB-96			01-OCT-96			09-DEC-96			24-JUN-97		
		VALUE	QUAL	UNITS	VALUE	QUAL	UNITS	VALUE	QUAL	UNITS	VALUE	QUAL	UNITS
1,1,1,2-Tetrachloroethane				ug/l	1	U	ug/l	1	U	ug/l	1	U	ug/l
1,2,3-Trichloropropane				ug/l	1	U	ug/l	1	U	ug/l	1	U	ug/l
LEAD	ug/l												
Lead				ug/l	3	U	ug/l	3	U	ug/l	3	U	ug/l
PNA COMPDS	ug/l												
Naphthalene				ug/l	5	U	ug/l	5	U	ug/l	5	U	ug/l
2-Methylnaphthalene				ug/l	5	U	ug/l	5	U	ug/l	5	U	ug/l
1-Methylnaphthalene				ug/l	5	U	ug/l	5	U	ug/l	5	U	ug/l
Acenaphthylene				ug/l	5	U	ug/l	5	U	ug/l	5	U	ug/l
Acenaphthene				ug/l	5	U	ug/l	5	U	ug/l	5	U	ug/l
Fluorene				ug/l	5	U	ug/l	5	U	ug/l	5	U	ug/l
Phenanthrene				ug/l	5	U	ug/l	5	U	ug/l	5	U	ug/l
Anthracene				ug/l	5	U	ug/l	5	U	ug/l	5	U	ug/l
Fluoranthene				ug/l	5	U	ug/l	5	U	ug/l	5	U	ug/l
Pyrene				ug/l	5	U	ug/l	5	U	ug/l	5	U	ug/l
Benzo (a) anthracene				ug/l	5	U	ug/l	5	U	ug/l	5	U	ug/l
Chrysene				ug/l	5	U	ug/l	5	U	ug/l	5	U	ug/l
Benzo (b) fluoranthene				ug/l	5	U	ug/l	5	U	ug/l	5	U	ug/l
Benzo (k) fluoranthene				ug/l	5	U	ug/l	5	U	ug/l	5	U	ug/l
Benzo (a) pyrene				ug/l	5	U	ug/l	5	U	ug/l	5	U	ug/l
Indeno (1,2,3-cd) pyrene				ug/l	5	U	ug/l	5	U	ug/l	5	U	ug/l
Dibenzo (a,h) anthracene				ug/l	5	U	ug/l	5	U	ug/l	5	U	ug/l
Benzo (g,h,i) perylene				ug/l	5	U	ug/l	5	U	ug/l	5	U	ug/l
TOTAL PETROLEUM HYDROCARBON	mg/l												
Total petroleum hydrocarbon				mg/l	1	U	mg/l	1	U	mg/l	1	U	mg/l

Lab Sample Number:		96120066-6			G8232005			MB473005
Site		2273			2273			2273
Locator		TRIP BLANK			TRIP BLK			TRIPBLANK
Collect Date:		09 DEC 96			15-AUG-95			25-JUL-96
	VALUE	QUAL	UNITS	VALUE	QUAL	UNITS	VALUE	QUAL UNITS
EDB	ug/l							
Ethylene dibromide			ug/l			ug/l		- ug/l
EPA 601/602	ug/l							
Chloromethane		1	U ug/l		1	U ug/l		1 U ug/l
Bromomethane		1	U ug/l		1	U ug/l		1 U ug/l
Dichlorodifluoromethane		1	U ug/l		1	U ug/l		1 U ug/l
Vinyl chloride		1	U ug/l		1	U ug/l		1 U ug/l
Chloroethane		1	U ug/l		1	U ug/l		1 U ug/l
Methylene chloride		1	U ug/l		5	U ug/l		5 U ug/l
Trichlorofluoromethane		1	U ug/l		1	U ug/l		1 U ug/l
1,1-Dichloroethene		1	U ug/l		1	U ug/l		1 U ug/l
1,1-Dichloroethane		1	U ug/l		1	U ug/l		1 U ug/l
trans-1,2-Dichloroethene		1	U ug/l		1	U ug/l		1 U ug/l
Chloroform		1	U ug/l		1	U ug/l		1 U ug/l
1,2-Dichloroethane		1	U ug/l		1	U ug/l		1 U ug/l
1,1,1-Trichloroethane		1	U ug/l		1	U ug/l		1 U ug/l
Carbon tetrachloride		1	U ug/l		1	U ug/l		1 U ug/l
Bromodichloromethane		1	U ug/l		1	U ug/l		1 U ug/l
1,2-Dichloropropane		1	U ug/l		1	U ug/l		1 U ug/l
cis-1,3-Dichloropropene		1	U ug/l		1	U ug/l		1 U ug/l
Trichloroethene		1	U ug/l		1	U ug/l		1 U ug/l
Dibromochloromethane		1	U ug/l		1	U ug/l		1 U ug/l
1,1,2-Trichloroethane		1	U ug/l		1	U ug/l		1 U ug/l
trans-1,3-Dichloropropene		1	U ug/l		1	U ug/l		1 U ug/l
Bromoform		1	U ug/l		1	U ug/l		1 U ug/l
1,1,2,2-Tetrachloroethane		1	U ug/l		1	U ug/l		1 U ug/l
Tetrachloroethene		1	U ug/l		1	U ug/l		1 U ug/l
Chlorobenzene		1	U ug/l		1	U ug/l		1 U ug/l
1,3-Dichlorobenzene		1	U ug/l		1	U ug/l		1 U ug/l
1,2-Dichlorobenzene		1	U ug/l		1	U ug/l		1 U ug/l
1,4-Dichlorobenzene		1	U ug/l		1	U ug/l		1 U ug/l
Methyl tert-butyl ether		5	U ug/l		1	U ug/l		1 U ug/l
Benzene		1	U ug/l		1	U ug/l		1 U ug/l
Toluene		1	U ug/l		1	U ug/l		1 U ug/l
Chlorobenzene		1	U ug/l		1	U ug/l		1 U ug/l
Ethylbenzene		1	U ug/l		1	U ug/l		1 U ug/l
Xylenes (total)		-	ug/l		1	U ug/l		- ug/l
o-Xylene		1	U ug/l		-	ug/l		1 U ug/l
m,p-Xylene		1	U ug/l		-	ug/l		2 U ug/l
Bromobenzene		1	U ug/l		-	ug/l		- ug/l

Lab Sample Number:		96120066 4			G8232001			G8232002			G8232003		
Site		2273			2273			2273			2273		
Locator		006D301/DW3			006GC101			006GC201			006GC301		
Collect Date:		09-DEC-96			15-AUG-95			15-AUG-95			15-AUG-95		
		VALUE	QUAL	UNITS	VALUE	QUAL	UNITS	VALUE	QUAL	UNITS	VALUE	QUAL	UNITS
EPA 601/602	ug/l												
Chloroform		5.4		ug/l		U	ug/l		U	ug/l		U	ug/l
Chlorobenzene		2		ug/l		U	ug/l		U	ug/l		U	ug/l
1,2-Dichlorobenzene		110		ug/l		U	ug/l		U	ug/l		U	ug/l
1,4-Dichlorobenzene		4.9		ug/l		U	ug/l		U	ug/l		U	ug/l
Benzene			U	ug/l		U	ug/l		U	ug/l		U	ug/l
Chlorobenzene		2		ug/l		U	ug/l		U	ug/l		U	ug/l
Ethylbenzene			U	ug/l		U	ug/l		U	ug/l		U	ug/l
Xylenes (total)				ug/l		U	ug/l		U	ug/l		U	ug/l
o-Xylene			U	ug/l			ug/l			ug/l			ug/l
m,p-Xylene			U	ug/l			ug/l			ug/l			ug/l
LEAD	ug/l												
Lead		15		ug/l	19.5		ug/l	2.7		ug/l		U	ug/l
PNA COMPDS	ug/l												
Naphthalene			U	ug/l		U	ug/l		U	ug/l		U	ug/l
2-Methylnaphthalene			U	ug/l		U	ug/l		U	ug/l		U	ug/l
1-Methylnaphthalene			U	ug/l		U	ug/l		U	ug/l		U	ug/l
TOTAL PETROLEUM HYDROCARBON	mg/l												
Total petroleum hydrocarbon			U	mg/l		U	mg/l		U	mg/l		U	mg/l

Lab Sample Number:		G8232004			G8232004RE			96100017-4			97010005-1
Site		2273			2273			2273			2273
Locator		006GC401			006GC401RE			006GD101/2273DW1			006GD102/DW-1
Collect Date:		15-AUG-95			15-AUG-95			01-OCT-96			02-JAN-97
	VALUE	QUAL	UNITS	VALUE	QUAL	UNITS	VALUE	QUAL	UNITS	VALUE	QUAL UNITS
EPA 601/602	ug/l										
Chloroform		-	U ug/l	-		ug/l	-	U	ug/l	-	U ug/l
Chlorobenzene		-	U ug/l	-		ug/l	-	U	ug/l	-	U ug/l
1,2 Dichlorobenzene		-	U ug/l	-		ug/l	-	U	ug/l	-	U ug/l
1,4-Dichlorobenzene		-	U ug/l	-		ug/l	-	U	ug/l	-	U ug/l
Benzene		-	U ug/l	-		ug/l	-	U	ug/l	-	U ug/l
Chlorobenzene		-	U ug/l	-		ug/l	-	U	ug/l	-	U ug/l
Ethylbenzene		-	U ug/l	-		ug/l	236.5		ug/l	11.8	ug/l
Xylenes (total)		-	U ug/l	-		ug/l	-		ug/l	-	ug/l
o-Xylene		-	ug/l	-		ug/l	314.5		ug/l	36.1	ug/l
m,p-Xylene		-	ug/l	-		ug/l	835		ug/l	74.7	ug/l
LEAD	ug/l										
Lead		4.1	ug/l	-		ug/l	-	U	ug/l	-	ug/l
PNA COMPDS	ug/l										
Naphthalene		-	U ug/l	-	U	ug/l	-	U	ug/l	-	ug/l
2-Methylnaphthalene		-	U ug/l	-	U	ug/l	-	U	ug/l	-	ug/l
1-Methylnaphthalene		-	U ug/l	-	U	ug/l	-	U	ug/l	-	ug/l
TOTAL PETROLEUM HYDROCARBON	mg/l										
Total petroleum hydrocarbon		-	U mg/l	-		mg/l	-	U	mg/l	-	mg/l

Lab Sample Number:		97060163-2			96120066-3			97010005-2			97060163-3		
Site		2273			2273			2273			2273		
Locator		006GD103/2273 DW-1			006GD201/DW2			006GD202/DM-2			006GD203/2273 DW-2		
Collect Date:		24-JUN-97			09-DEC-96			02-JAN-97			24-JUN-97		
		VALUE	QUAL	UNITS	VALUE	QUAL	UNITS	VALUE	QUAL	UNITS	VALUE	QUAL	UNITS
EPA 601/602	ug/l												
Chloroform		-	U	ug/l	-	U	ug/l	-	U	ug/l	-	U	ug/l
Chlorobenzene		-	U	ug/l	39		ug/l	12.7		ug/l	29.9		ug/l
1,2-Dichlorobenzene		-	U	ug/l	-	U	ug/l	-	U	ug/l	-	U	ug/l
1,4-Dichlorobenzene		-	U	ug/l	-	U	ug/l	-	U	ug/l	-	U	ug/l
Benzene		-	U	ug/l	4.8		ug/l	-	U	ug/l	3.3		ug/l
Chlorobenzene		-	U	ug/l	39		ug/l	12.7		ug/l	29.9		ug/l
Ethylbenzene		5.4		ug/l	7		ug/l	2.1		ug/l	4		ug/l
Xylenes (total)		-		ug/l	-		ug/l	-		ug/l	-		ug/l
o-Xylene		130		ug/l	8.6		ug/l	3.5		ug/l	17.2		ug/l
m,p-Xylene		120		ug/l	16.3		ug/l	8		ug/l	28.8		ug/l
LEAD	ug/l												
Lead		-	U	ug/l	11		ug/l			ug/l	-	U	ug/l
PNA COMPDS	ug/l												
Naphthalene		-	U	ug/l	-	U	ug/l	-		ug/l	-	U	ug/l
2-Methylnaphthalene		-	U	ug/l	-	U	ug/l	-		ug/l	-	U	ug/l
1-Methylnaphthalene		-	U	ug/l	-	U	ug/l	-		ug/l	-	U	ug/l
TOTAL PETROLEUM HYDROCARBON	mg/l												
Total petroleum hydrocarbon		-	U	mg/l	-	U	mg/l	-		mg/l	-	U	mg/l

Lab Sample Number:		97010005-3				97060163-4				97060163-5				97060163-6	
Site		2273				2273				2273				2273	
Locator		006GD302/DW-3				006GD303/2273 DW-3				006GD401/2273 DW-4				006GD501/2273 DW-5	
Collect Date:		02-JAN-97				24-JUN-97				24-JUN-97				24-JUN-97	
		VALUE	QUAL	UNITS		VALUE	QUAL	UNITS		VALUE	QUAL	UNITS		VALUE	QUAL UNITS
EPA 601/602	ug/l														
Chloroform			-	U	ug/l		-	U	ug/l		-	U	ug/l		- U ug/l
Chlorobenzene			-	U	ug/l		-	U	ug/l		-	U	ug/l		- U ug/l
1,2-Dichlorobenzene			-	U	ug/l	42.8			ug/l		-	U	ug/l		- U ug/l
1,4-Dichlorobenzene			-	U	ug/l		-	U	ug/l		-	U	ug/l		- U ug/l
Benzene			-	U	ug/l		-	U	ug/l		-	U	ug/l		- U ug/l
Chlorobenzene			-	U	ug/l		-	U	ug/l		-	U	ug/l		- U ug/l
Ethylbenzene			-	U	ug/l		-	U	ug/l		-	U	ug/l		- U ug/l
Xylenes (total)					ug/l		-	U	ug/l	3.7			ug/l		- U ug/l
o-Xylene			-	U	ug/l				ug/l				ug/l		- ug/l
m,p-Xylene			-	U	ug/l		-	U	ug/l	3.9			ug/l		- U ug/l
LEAD	ug/l									8.1			ug/l		- U ug/l
Lead					ug/l		-	U	ug/l		-	U	ug/l		- U ug/l
PNA COMPDS	ug/l														
Naphthalene					ug/l		-	U	ug/l		-	U	ug/l	8	ug/l
2-Methylnaphthalene					ug/l		-	U	ug/l		-	U	ug/l	22	ug/l
1-Methylnaphthalene					ug/l		-	U	ug/l		-	U	ug/l	16	ug/l
TOTAL PETROLEUM HYDROCARBON	mg/l														
Total petroleum hydrocarbon					mg/l		-	U	mg/l		-	U	mg/l		- U mg/l

Lab Sample Number:		MB473001				MB473002				MB473003				96100017-2	
Site		2273				2273				2273				2273	
Locator		006GM101				006GM201				006GM301				006GM401/2273MW4	
Collect Date:		25-JUL-96				25-JUL-96				25-JUL-96				01-OCT-96	
		VALUE	QUAL	UNITS		VALUE	QUAL	UNITS		VALUE	QUAL	UNITS		VALUE	QUAL UNITS
EPA 601/602	ug/l														
Chloroform			-	U	ug/l		-	U	ug/l		-	U	ug/l		- U ug/l
Chlorobenzene			-	U	ug/l		-	U	ug/l		-	U	ug/l	22.9	ug/l
1,2-Dichlorobenzene			-	U	ug/l		-	U	ug/l		-	U	ug/l		- U ug/l
1,4-Dichlorobenzene			-	U	ug/l		-	U	ug/l		-	U	ug/l		- U ug/l
Benzene			-	U	ug/l		-	U	ug/l		-	U	ug/l	3.2	ug/l
Chlorobenzene			-	U	ug/l		-	U	ug/l		-	U	ug/l	22.9	ug/l
Ethylbenzene		27			ug/l		-	U	ug/l		-	U	ug/l		- U ug/l
Xylenes (total)					ug/l				ug/l				ug/l		ug/l
o-Xylene		4.6			ug/l		-	U	ug/l		-	U	ug/l		- U ug/l
m,p-Xylene		26			ug/l		-	U	ug/l		-	U	ug/l		- U ug/l
LEAD	ug/l														
Lead		4.8			ug/l	3.5			ug/l	6.3			ug/l		- U ug/l
PNA COMPDS	ug/l														
Naphthalene			-	U	ug/l		-	U	ug/l		-	U	ug/l		- U ug/l
2-Methylnaphthalene			-	U	ug/l		-	U	ug/l		-	U	ug/l		- U ug/l
1-Methylnaphthalene			-	U	ug/l		-	U	ug/l		-	U	ug/l		- U ug/l
TOTAL PETROLEUM HYDROCARBON	mg/l														
Total petroleum hydrocarbon		5.05			mg/l	.19			mg/l	.14			mg/l	3.7	mg/l

Lab Sample Number:		MA311004DL			96100017-1			96120066-5			97060163-1		
Site		2273			2273			2273			2273		
Locator		006GT101/2273 TW-1DL			006RB101/RB-1			006RB201/RB2			006RB301/2273 RB-3		
Collect Date:		21-FEB-96			01-OCT-96			09-DEC-96			24-JUN-97		
		VALUE	QUAL	UNITS	VALUE	QUAL	UNITS	VALUE	QUAL	UNITS	VALUE	QUAL	UNITS
EPA 601/602	ug/l												
Chloroform		-		ug/l	-	U	ug/l	-	U	ug/l	-	U	ug/l
Chlorobenzene		-	U	ug/l	-	U	ug/l	-	U	ug/l	-	U	ug/l
1,2-Dichlorobenzene		-	U	ug/l	-	U	ug/l	-	U	ug/l	-	U	ug/l
1,4-Dichlorobenzene		-	U	ug/l	-	U	ug/l	-	U	ug/l	-	U	ug/l
Benzene		-	U	ug/l	-	U	ug/l	-	U	ug/l	-	U	ug/l
Chlorobenzene		-	U	ug/l	-	U	ug/l	-	U	ug/l	-	U	ug/l
Ethylbenzene		24		ug/l	-	U	ug/l	-	U	ug/l	-	U	ug/l
Xylenes (total)		500	D	ug/l			ug/l			ug/l	-		ug/l
o-Xylene		-		ug/l	-	U	ug/l	-	U	ug/l	-	U	ug/l
m,p-Xylene		-		ug/l	-	U	ug/l	-	U	ug/l	-	U	ug/l
LEAD	ug/l												
Lead		-		ug/l	-	U	ug/l	-	U	ug/l	-	U	ug/l
PNA COMPDS	ug/l												
Naphthalene		-		ug/l	-	U	ug/l	-	U	ug/l	-	U	ug/l
2-Methylnaphthalene		-		ug/l	-	U	ug/l	-	U	ug/l	-	U	ug/l
1-Methylnaphthalene		-		ug/l	-	U	ug/l	-	U	ug/l	-	U	ug/l
TOTAL PETROLEUM HYDROCARBON	mg/l												
Total petroleum hydrocarbon		-		mg/l	-	U	mg/l	-	U	mg/l	-	U	mg/l

Lab Sample Number:		96120066-6			G8232005			MB473005		
Site		2273			2273			2273		
Locator		TRIP BLANK			TRIP BLK			TRIPBLANK		
Collect Date:		09-DEC-96			15-AUG-95			25-JUL-96		
	VALUE	QUAL	UNITS	VALUE	QUAL	UNITS	VALUE	QUAL	UNITS	
EPA 601/602	ug/l									
Chloroform		-	U ug/l		U	ug/l		U	ug/l	
Chlorobenzene		-	U ug/l		U	ug/l		U	ug/l	
1,2-Dichlorobenzene		-	U ug/l		U	ug/l		U	ug/l	
1,4-Dichlorobenzene		-	U ug/l		U	ug/l		U	ug/l	
Benzene		-	U ug/l		U	ug/l		U	ug/l	
Chlorobenzene		-	U ug/l		U	ug/l		U	ug/l	
Ethylbenzene		-	U ug/l		U	ug/l		U	ug/l	
Xylenes (total)			ug/l		U	ug/l			ug/l	
o-Xylene			U ug/l			ug/l		U	ug/l	
m,p-Xylene		-	U ug/l			ug/l		U	ug/l	
LEAD	ug/l									
Lead			ug/l			ug/l			ug/l	
PNA COMPDS	ug/l									
Naphthalene			ug/l			ug/l			ug/l	
2-Methylnaphthalene			ug/l			ug/l			ug/l	
1-Methylnaphthalene			ug/l			ug/l			ug/l	
TOTAL PETROLEUM HYDROCARBON	mg/l									
Total petroleum hydrocarbon			mg/l			mg/l			mg/l	

GROUNDWATER ANALYTICAL RESULTS OBTAINED BY TETRA TECH NUS

GROUNDWATER ANALYTICAL RESULTS
BUILDING 2273

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

WELL DESIGNATION	DW-5	DW-5 (Duplicate)	DW-5	DW-5 (Duplicate)	DW-6	DW-6	DW-7	DW-7	DW-8	DW-8
SAMPLE ID	N2273GDW0510	N2273GDW0510-D	N2273GDW0513	N2273GDW0513-D	N2273GDW0610	N2273GDW0613	N2273GDW0710	N2273GDW0713	N2273GDW0810	N2273GDW0813
LAB ID	A9J050163003	A9J050163004	A0L010187006	A0L010187007	A9J040115003	A0L010187008	A9J050163001	A0L010187009	A9J040115004	A0L010187011
SAMPLE DATE	10/2/99	10/2/99	11/30/00	11/30/00	10/1/99	11/30/00	10/2/99	11/30/00	10/1/99	11/30/00
VOLATILES (µg/L)										
1,1,1-Trichloroethane	2.5 U	5 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U
1,1,2,2-Tetrachloroethane	2.5 U	5 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U
1,1,2-Trichloroethane	2.5 U	5 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U
1,1-Dichloroethane	2.5 U	5 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U
1,1-Dichloroethene	2.5 U	5 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichloroethane	2.5 U	5 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichloropropane	2.5 U	5 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U
2-Butanone	25 UR	50 UR	10 U	10 U	50 UR	10 U	10 UR	10 U	10 UR	10 U
2-Hexanone	25 UJ	50 UJ	10 U	10 U	50 U	10 U	10 UJ	10 U	10 U	10 U
4-Methyl-2-Pentanone	25 UJ	50 UJ	5 U	5 U	50 U	5 U	10 UJ	5 U	10 U	5 U
Acetone	25 UR	50 UR	5 U	5 U	83 J	5 U	23 J	5 U	10 UR	5 U
Benzene	2.5 U	5 U	1 U	1 U	5 U	0.12 J	5.8	3.2	0.71 J	1 U
Bromodichloromethane	2.5 U	5 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U
Bromoform	2.5 U	5 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U
Bromomethane	2.5 U	5 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U
Carbon Disulfide	2.5 U	5 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U
Carbon Tetrachloride	2.5 U	5 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U
Chlorobenzene	2.5 U	5 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U
Chloroethane	2.5 U	5 U	1 U	1 U	5 U	0.35 J	1.3	0.75 J	11	1 U
Chloroform	2.5 U	5 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U
Chloromethane	2.5 U	5 U	1 U	1 U	0.71 J	1 U	0.23 J	1 U	0.14 J	1 U
Cis-1,2-Dichloroethene	2.5 U	5 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U
Cis-1,3-Dichloropropene	2.5 U	5 U	1 U	1 U	5 U	1 U	0.12 J	0.11 J	1 U	1 U
Dibromochloromethane	2.5 U	5 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U
Ethylbenzene	2.5 U	5 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U
Methyl Tert-Butyl Ether	NA	NA	NA	NA	5 U	0.3 J	0.36 J	0.25 J	1.2	1 U
Methylene Chloride	2.5 U	5 U	1 U	1 U	NA	NA	NA	NA	NA	NA
Styrene	2.5 U	5 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U
Tetrachloroethene	2.5 U	5 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U
Toluene	2.5 U	5 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U
Trans-1,2-Dichloroethene	2.5 U	5 U	1 U	1 U	5 U	1 U	1 U	0.16 J	0.15 J	1 U
Trans-1,3-Dichloropropene	2.5 U	5 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U
Trichloroethene	2.5 U	5 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U
Vinyl Chloride	2.5 U	5 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U
Xylenes, Total	2.5 U	5 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U
PAHs (µg/L)										
1-Methylnaphthalene	21	20	25	22	100	1 U	0.94 J	1 U	9.2	1 U
2-Methylnaphthalene	28	27	36	33	NA	NA	NA	NA	2 U	2 UJ
Acenaphthene	1 U	1 U	0.55 J	1 U	NA	NA	NA	NA	2 U	2 UJ
Acenaphthylene	1 U	1 U	1 U	1 U	NA	NA	NA	NA	1 U	1 UJ
Anthracene	1 U	1 U	1 U	1 U	NA	NA	NA	NA	1 U	1 UJ
Benzo(A)anthracene	0.1 U	0.1 U	0.1 U	0.1 U	NA	NA	NA	NA	1 U	1 UJ
Benzo(A)pyrene	0.1 U	0.1 U	0.1 U	0.1 U	NA	NA	NA	NA	0.1 U	0.1 UJ
Benzo(B)fluoranthene	0.1 U	0.1 U	0.1 U	0.1 U	NA	NA	NA	NA	0.1 U	0.1 UJ
Benzo(g,h,i)perylene	0.1 U	0.1 U	0.1 U	0.1 U	NA	NA	NA	NA	0.1 U	0.1 UJ
Benzo(k)fluoranthene	0.3 U	0.3 U	0.3 U	0.3 U	NA	NA	NA	NA	0.1 U	0.1 UJ
Chrysene	0.1 U	0.1 U	0.1 U	0.1 U	NA	NA	NA	NA	0.3 U	0.3 UJ
Dibenzo(a,h)anthracene	0.1 U	0.1 U	0.1 U	0.1 U	NA	NA	NA	NA	0.1 U	0.1 UJ
Fluoranthene	0.2 U	0.2 U	0.2 U	0.2 U	NA	NA	NA	NA	0.1 U	0.1 UJ
Fluorene	2 U	2 U	2 U	2 U	NA	NA	NA	NA	0.2 U	0.2 UJ
Indeno(1,2,3-cd)pyrene	0.1 U	0.1 U	0.1 U	0.1 U	NA	NA	NA	NA	2 U	2 UJ
Naphthalene	15	14	12	11	NA	NA	NA	NA	0.1 U	0.1 UJ
Phenanthrene	1 U	1 U	1 U	1 U	NA	NA	NA	NA	0.4 J	2 UJ
Pyrene	0.1 U	0.1 U	0.1 U	0.1 U	NA	NA	NA	NA	1 U	1 UJ
PETROLEUM HYDROCARBONS (mg/L)									0.1 U	0.1 UJ
Total Petroleum Hydrocarbons	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

NA - No analysis performed

GROUNDWATER ANALYTICAL RESULTS
BUILDING 2273

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

WELL DESIGNATION	DW-9	DW-9	DW-9	MW-4	MW-4	MW-8	MW-8	MW-9	MW-9
SAMPLE ID	N2273GDW0911	N2273GDW0912	N2273GDW0913	N2273GMW0410	N2273GMW0413	N2273GMW0810	N2273GMW0813	N2273GMW0910	N2273GMW0913
LAB ID	A0D180174018	A0F030167001	A0L010187010	A9J040115001	A0L010187003	A9J040115002	A0L010187004	A9J050163002	A0L010187005
SAMPLE DATE	4/17/00	6/2/00	11/30/00	9/30/99	11/30/00	10/1/99	11/30/00	10/2/99	11/30/00
VOLATILES (µg/L)									
1,1,1-Trichloroethane	1 U	1.7 U	1 U	2.5 U	1 U	2.5 U	0.42 J	2.5 U	1 U
1,1,2,2-Tetrachloroethane	1 U	1.7 U	1 U	2.5 U	1 U	2.5 U	1 U	2.5 U	1 U
1,1,2-Trichloroethane	1 U	1.7 U	1 U	2.5 U	1 U	2.5 U	1 U	2.5 U	1 U
1,1-Dichloroethane	1 U	1.7 U	1 U	2.5 U	1 U	2.5 U	1 U	2.5 U	1 U
1,1-Dichloroethene	1 U	1.7 U	1 U	2.5 U	1 U	2.5 U	1 U	2.5 U	1 U
1,2-Dichloroethane	1 U	1.7 U	1 U	2.5 U	1 U	2.5 U	1 U	2.5 U	1 U
1,2-Dichloropropane	1 U	1.7 U	1 U	2.5 U	1 U	2.5 U	1 U	2.5 U	1 U
2-Butanone	2.3 J	17 UR	10 U	48 J	0.4 J	25 UR	10 U	25 UR	10 U
2-Hexanone	10 U	17 U	10 U	25 U	10 U	25 U	10 U	25 UJ	10 U
4-Methyl-2-Pentanone	10 U	17 U	5 U	25 U	5 U	12 U	5 U	25 UJ	5 U
Acetone	13 J	6.5 U	5 U	25 UR	5 U	25 UR	5 U	25 UR	5 U
Benzene	1.2	0.45 J	0.28 J	1 J	0.18 J	2.5 U	1 U	2.5 U	1 U
Bromodichloromethane	1 U	1.7 U	1 U	2.5 U	1 U	2.5 U	1 U	2.5 U	1 U
Bromoform	1 U	1.7 U	1 U	2.5 U	1 U	2.5 U	1 U	2.5 U	1 U
Bromomethane	1 UJ	1.7 U	1 U	2.5 U	1 U	2.5 U	1 U	2.5 U	1 U
Carbon Disulfide	0.75 J	0.32 J	1 U	2.5 U	1 U	2.5 U	1 U	2.5 U	1 U
Carbon Tetrachloride	1 U	1.7 U	1 U	2.5 U	1 U	2.5 U	1 U	2.5 U	1 U
Chlorobenzene	9.8	8.2	5	16	3.9	2.5 U	1 U	2.5 U	1 U
Chloroethane	1 U	1.7 U	1 U	2.5 U	1 U	2.5 U	1 U	2.5 U	1 U
Chloroform	1.1	1.7 U	1 U	2.5 U	1 U	2.5 U	1 U	2.5 U	1 U
Chloromethane	1 U	1.7 U	1 U	2.5 U	1 U	2.5 U	1 U	0.89 J	1 U
Cis-1,2-Dichloroethene	1 U	1.7 U	1 U	2.5 U	1 U	2.5 U	1 U	2.5 U	1 U
Cis-1,3-Dichloropropene	1 U	1.7 U	1 U	2.5 U	1 U	2.5 U	1 U	2.5 U	1 U
Dibromochloromethane	1 U	1.7 U	1 U	2.5 U	1 U	2.5 U	1 U	2.5 U	1 U
Ethylbenzene	1.4	1.6 J	1.8	2.5 U	1 U	2.5 U	1 U	2.5 U	1 U
Methyl Tert-Butyl Ether	NA	NA	NA	NA	NA	12 U	1 U	NA	NA
Methylene Chloride	1 U	1.7 U	1 U	14 U	1 U	2.5 U	1 U	2.5 U	1 U
Styrene	1 U	1.7 U	1 U	2.5 U	1 U	2.5 U	1 U	2.5 U	1 U
Tetrachloroethene	1 U	1.7 U	1 U	2.5 U	1 U	2.5 U	1 U	2.5 U	1 U
Toluene	1 U	1.7 U	1 U	2.5 U	0.14 J	2.5 U	1 U	2.5 U	1 U
Trans-1,2-Dichloroethene	1 U	1.7 U	1 U	2.5 U	1 U	2.5 U	1 U	2.5 U	1 U
Trans-1,3-Dichloropropene	1 U	1.7 U	1 U	2.5 U	1 U	2.5 U	1 U	2.5 U	1 U
Trichloroethene	1 U	1.7 U	1 U	2.5 U	1 U	2.5 U	2.6	2.5 U	1 U
Vinyl Chloride	1 U	1.7 U	1 U	2.5 U	1 U	2.5 U	1 U	2.5 U	1 U
Xylenes, Total	4	4.1	1.5	2.5 U	1 U	2.5 U	1 U	2.5 U	1 U
PAHs (µg/L)									
1-Methylnaphthalene	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylnaphthalene	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthylene	NA	NA	NA	NA	NA	NA	NA	NA	NA
Anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(A)anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(A)pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(B)fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(g,h,i)perylene	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chrysene	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenzo(a,h)anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluorene	NA	NA	NA	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
PETROLEUM HYDROCARBONS (mg/L)									
Total Petroleum Hydrocarbons	NA	NA	NA	NA	NA	0.5 U	0.66 J	NA	NA

NA - N /sis performed

APPENDIX I

WELL LOCATIONS AND TOP OF CASING ELEVATIONS

NTC ORLANDO - BUILDING 2273
NEW MONITORING WELLS
SEPTEMBER 21, 2000

NAME	NORTHING	EASTING	T.C. ELEV.	GRD. ELEV
B2273-DW-09	1,535,407.61	550,357.44	118.42	115.58
DW6	1,535,431.58	550,430.52	118.74	115.80
DW7	1,535,412.60	550,400.91	118.38	115.61
DW8	1,535,439.03	550,480.98	119.60	115.90
MW6	1,535,492.03	550,424.49		
MW8	1,535,428.93	550,435.12	119.37	115.81
MW9	1,535,411.85	550,407.70	118.68	115.56
COR BUILDING	1,535,460.78	550,445.94		
COR BUILDING	1,535,441.84	550,445.81		
COR BUILDING	1,535,441.90	550,473.66		
COR FENCE	1,535,404.91	550,367.94		
COR FENCE	1,535,394.54	550,398.07		
COR FENCE	1,535,391.64	550,488.89		
COR FENCE	1,535,387.25	550,508.36		
COR FENCE	1,535,512.21	550,364.88		
COR FENCE	1,535,516.28	550,534.94		
END FENCE	1,535,462.02	550,366.18		
END FENCE/COR BUILDING	1,535,431.69	550,544.30		
END FENCE/COR BUILDING	1,535,508.52	550,544.37		
EDGE GRAVEL	1,535,491.21	550,404.85		